

SECTION 14 2413 HYDRAULIC FREIGHT ELEVATORS

PART 1 - GENERAL

1.1 SUMMARY

- A. **Section Includes:** Hydraulic Borehole/Holeless Freight Elevators as follows.

1. Freight Elevator(s): indicated on Drawings as (ELEV-X).

1.2 RELATED ITEMS

- A. Section 03 3000 - Cast-in-Place Concrete; for setting sleeves, inserts, and anchoring devices in concrete.
- B. Section 04 2000 - Unit Masonry; for setting sleeves, inserts, and anchoring devices in masonry for fastening guide-rail brackets.
- C. Section 05 1210 - Structural Steel Framing Fabrication for the following:
1. Attachment plates, angle brackets, and other auxiliary support steel.
 2. Divider beams.
- D. Section 05 5000 - Metal Fabrications; for the following:
1. Miscellaneous attachment plates and angle brackets.
 2. Pit ladders.
 3. Steel channel door frames.
 4. Sill Angles.
- E. Section 08 7100 - Hardware; for removable core cylinders provided for key switches.
- F. Section 09 9100 - Painting; for field painting of steel doors, gates and frames.
- G. Section 14 2413 - Hydraulic Freight Elevators.
- H. Division 21 Fire Suppression for coordination of fire protection systems with elevator requirements.
- I. Division 22 Plumbing for coordination of required sumps and sump holes in elevator pits.
- J. Division 23 for coordination of mechanical ventilation requirements in elevator machine rooms and hoistways as required.
- K. Sections 26 2816 and 26 2817 - Disconnect Switches and Disconnect Switch Installation. all electrical requirements to comply with NEC, ASME 17.1 requirements
- L. Section 27 0528 - Telephone Raceway System; for telephone service to elevators.
- M. Refer to Section 28 3100 for smoke detectors in elevator lobbies to initiate emergency recall operation and heat detectors in shafts and machine rooms to disconnect power from elevator equipment before sprinkler activation and for connection to elevator controllers.

1.3 DEFINITIONS

- A. Definitions in ASME A17.1/CSA B44 apply to work of this Section.

1. Hydraulic Holeless: A hydraulic elevator where the pistons or cable/telescopic devices used for raising and lowering the elevator cab are located at or above the elevator pit.
2. Hydraulic Borehole: A hydraulic elevator where a piston is used for raising and lowering the elevator cab is located below the elevator pit, housed in a cylinder drilled (bored) into the ground.
3. Hydraulic Elevator Types:
4. Hydraulic Holeless Types:
- a. One Stage Telescopic.
 - b. Two Stage Telescopic.
 - c. Three Stage Telescopic.
 - d. Hybrid (Cable/Telescopic).

5. Hydraulic Borehole Type.
6. Defective Elevator Work: Operation or control system failures; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; the need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.

1.4 REFERENCES

- A. American Society for Testing of Materials, (ASTM):
 1. ASTM A 240: Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
 2. ASTM A 276: Specification for Stainless Steel Bars and Shapes.
 3. ASTM A 554: Specification for Welded Stainless Steel Mechanical Tubing.
 4. ASTM A 1008: Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
 5. ASTM A 1011: Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
 6. ASTM B 151, Specification for Copper-Nickel-Zinc Alloy (Nickel Silver) and Copper-Nickel Rod and Bar".
 7. ASTM B 221: Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 8. ASTM C 1102: Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
 9. ASTM D 1785, "Specification for Poly Vinyl Chloride, (PVC) Plastic Pipe, Schedules 40, 80, 120".
 10. ASTM D 2466, "Specification for Poly Vinyl Chloride, (PVC) Plastic Pipe Fittings, Schedule 40".
 11. ASTM D 2564, "Specification for Solvent Cements for Poly Vinyl Chloride, (PVC) Plastic Piping Systems".
 12. ASTM E 84, "Test Method for Surface Burning Characteristics of Building Materials".
- B. American Society of Mechanical Engineers, (ASME):
 1. ASME A17.1, "Safety Code for Elevators and Escalators". Prevailing Adopted Version with supplements.
 2. ASME 17.2 Inspectors Manuals.
 3. ASME 17.5 Electrical Requirements.
- C. National Electrical Manufacturers Association, (NEMA):
 1. NEMA LD 3, "High Pressure Decorative Laminates".
- D. National Fire Protection Agency, (NFPA):
 1. NFPA 70, National Electrical Code.
 2. NFPA 80, Fire Doors and Fire Windows.
 3. NFPA 252: Fire Tests of Door Assemblies
- E. Underwriters Laboratories, Inc., (UL):
 1. UL 10B: Fire Tests of Door Assemblies.
- F. U.S. Architectural & Transportation Barriers Compliance Board:
 1. Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG), with amendments.

1.5 SUBMITTALS

- A. **Product Data:** Include capacities, sizes, performances, operations, safety features, finishes, and similar information.
 1. Cab enclosures and hoistway entrances.
 2. Operation, control, and signal systems.
 3. Machine room layouts.
- B. **Shop Drawings:** Show plans, elevations, sections, and large-scale details indicating service at each landing, elevator cab elevations, cab control panel, machine room layout, coordination with building structure, relationships with other construction, and locations of equipment and signals. Indicate variations from specified requirements, maximum dynamic and static loads imposed on building structure at points of support, and maximum and average power demands.
 1. Provide electrical, structural, and mechanical data including BTU output.

2. Any discrepancy with the sizes or dimensions of elevator platforms, hoistways or associated appurtenances must be identified and noted on Shop Drawings and resolved before proceeding.
3. Shop Drawings Submittal Process: Submit shop drawings for all Vertical Transportation components for Project together in one package including all elevators and controls as applicable.
 - a. Manufacturer:
 - 1) Manufacturer shall provide Vertical Transportation Shop Drawings. They shall meet Code and project specific requirements from the Contract Documents. Drawings not prepared and signed by manufacturer will be returned as unacceptable.
 - (a) Manufacturer shall assign a Project Number or Name referencing this specific project. Indicate Number or Name on Shop Drawings. All drawings or each submittal must use the Elevator complex number, location and job number.
 - (b) Copies: Submit electronic copies as a PDF. Manufacturer shall send Shop Drawings to Project General Contractor (GC) for review and approval.
 - b. General Contractor:
 - 1) General Contractor shall review, stamp and sign Shop Drawings for all Vertical Transportation components.
 - 2) General Contractor shall retain an electronic copy and submit (1) electronic signed copy through the submittal process to the Architect, Target Project Manager (Target PM) and Owner's Vertical Transportation Consultant (VT Consultant) for review and approval. Identify Project name and number on transmittal.
 - c. Target's Vertical Transportation Consultant (VT Consultant):
 - 1) HKA Elevator Consulting, 23211 South Pointe Drive, Laguna Hills, CA, Phone 949-348-9711.
 - 2) VT Consultant shall review, stamp and sign Shop Drawings for all Vertical Transportation components.
 - 3) VT Consultant shall scan the signed printed copy for their files and submit the stamped signed electronic copy to the Project's Architect of Record for review and approval. Identify Project name and elevator number and location on transmittal.
 - d. Architect of Record:
 - 1) Architect of Record shall review, stamp and sign Shop Drawings for all Vertical Transportation components.
 - 2) Architect will distribute a copy of their reviewed Shop Drawings to the project engineers (Structural, Mechanical, and Electrical), for review. Architect will receive the engineer reviewed copies and will compile all review comments to the Architectural reviewed Shop Drawings (this document then becomes the "original signed printed copy").
 - 3) Architect of Record to photo copy the compiled signed printed copy for Architect's file and forward the original signed printed copy to General Contractor.
 - e. General Contractor:
 - 1) General Contractor shall scan or present the signed copy for their files and submit the original signed printed copy or electronic version, with corrections noted from GC, VT Consultant, Architect, and Engineers to Manufacturer for corrective action as necessary. Refer to Section 01 3300 – Submittal Procedures for definitions of corrective actions.
 - 2) Resubmit corrected Shop Drawings to Architect of Record and VT Consultant as applicable
 - 3) If no corrective action was required, notify Manufacturer of approval for fabrication.
- C. Maintenance Manuals: Provide written information necessary for proper maintenance and adjustment of the equipment prior to final acceptance.
 1. Straight-line wiring diagram of as-installed elevator circuits with index of location and function of components. Provide three neatly bound final corrected sets within 30 days after job acceptance for the Owner's file. One copy to be left in the machine room displayed in a plastic holder, neatly bound.
 - a. Provide additional copy in electronic format to Target PM who will provide copies to Target Property Development, Vertical Transportation Lead Program Manager.
 2. Lubricating instructions, including recommended grade of lubricants. Provide three bound copies.
 3. Parts catalogs for replaceable parts including ordering forms and instructions. Provide three bound copies.
 4. Three sets of instruction manuals and equipment catalogs.
 5. MSDS sheets for the hydraulic oil and solvents inserted into a plastic insert mounted on the tank unit for quick reference.
 6. One set of approved shop drawings shall be placed in the elevator machine room.

7. One complete construction manual of all drawings, literature of all equipment shall be provided and left in the machine room.
- D. Keys: Ten (10) sets of each key for each key switch or device. Including but not limited to the lunar key as allowed by AHJ, keys to service panel, inspection, fan, and light. Key cores per AHJ. All keys to be properly tagged. Provide plastic tags or brass key tags, PAPER TAGS ARE NOT ALLOWED.
- E. Fire Box:
1. Main Elevator Lobby Fire Box: Provide a Main Elevator Lobby Fire Box that is in compliance with requirements of Authority Having Jurisdiction (AHJ). Mount Main Elevator Lobby Fire Box in main elevator lobby. Within the fire box provide tagged keys per requirements of paragraph "Keys" above.
 2. Machine Room Group II Keys: Provide a Machine Room Group I key ring that is in compliance with requirements of Authority Having Jurisdiction (AHJ). Provide tagged keys per requirements of paragraph "Keys" above. Provide key cabinet or box as required by AHJ.
- F. Certificates and Permits: Provide Owner with inspection and acceptance certificates and operating permits as required by authorities having jurisdiction for normal, unrestricted use of elevators.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Elevator manufacturer or an experienced installer approved by elevator manufacturer who has completed elevator installations similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. Regulatory Requirements:
1. ASME A17.1/CSA B44, "Safety Code for Elevators and Escalators." Latest Adopted Version in the Jurisdiction.
 2. NFPA 70 National Electrical Code.
 3. NFPA 80 Fire Doors and Windows.
 4. Other applicable regulatory requirements pertaining to elevators and escalators.
 5. Accessibility Requirements: In addition to local governing regulations, comply with Section 4.10 in the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines (ADAAG)."
- C. Fire Rated Entrance Assemblies: Opening protective assemblies including frames, hardware and operation to comply with ASTM E 152, UL 10B and NFPA 80. Provide entrance assembly units bearing UL Class B labels.
- D. Seismic Requirements:
1. Seismic Risk Zone: Project is located in Zone [0 or 1] [2] [3 or greater].
 2. BOCA/SBC Seismic Performance Category ["B"], ["C"] and ["D"].
 3. IBC Seismic Design Category ["C"], ["D"], ["E"] and ["F"].
 4. Elevator System to withstand effects of earthquake motions determined according to ASCE/SEI 7.
 5. Comply with elevator safety requirements for seismic risk Zone 2 or greater in ASME A17.1/CSA B44.
 6. Provide Earthquake equipment required by ASME A17.1/CSA B44.
- E. Inspection and Testing: Elevator installer to obtain and pay for all required inspections, tests, permits and fees for elevator installation.
1. Inspection punch list for turnover to be prepared by Owner hired vertical transportation consultant.
- F. Flood Plain Requirements (As Required): Elevator Installer to identify and comply with additional requirements when the project site is located in an established flood plain.

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1.7 PRE-INSTALLATION MEETING (PRE-CONSTRUCTION PHASE)

- A. Pre-installation Meeting: Conduct a Pre-installation Meeting at Project Site to review Vertical Transportation delivery and installation procedures.
1. Meeting Attendance: Require attendance in meeting of GC, Target On-Site Representative (Target OSR), VT Consultant (via telephone or in person depending on the project), VT Contractor's Superintendent, Mechanical and Electrical contractors and other party's directly affecting work of this Section.
 2. Schedule: Coordinate Date and Time for Pre-installation Meeting with Target PM and GC.
 3. Pre-installation Meeting Agenda: Review the following.

- a. VT Consultants role in vertical transportation submittal review for Target brand compliance, inspection and punch list preparation.
 - b. Project drawings and specifications for application of vertical transportation systems.
 - c. Project Shop Drawing submittal requirements, completeness of submittals, approvals, and routing.
 - d. Coordination of submittals with work of other trades to assure necessary building infrastructure is available and properly prepared for vertical transportation installation.
 - e. Applicable local code requirements for vertical transportation systems that were researched by the General Contractor.
 - f. Production requirements for timely, operational completion of vertical transportation systems for use in store fixture delivery, including size of crew, number of qualified mechanics and capabilities to respond to requirements of construction schedule.
 - g. Proposed installation procedures with vertical transportation installer and other affected trades.
 - h. Delivery of vertical transportation components, access to installation locations and specific Project conditions.
 - i. Required inspections and quality expectations for vertical transportation components.
 - j. Forecasted weather conditions during delivery and installation periods and measures to be taken in the event of adverse conditions.
 - k. Discuss vertical transportation pre-inspection preparation, turnover inspection, and Authority having Jurisdiction- (AHJ) inspection.
 - l. Review punch list preparation at turnover, and final inspection Review final inspections, testing and turnover of vertical transportation units and the associated coordination and interface with alarm and monitoring systems, emergency communication and final integration into Alert One System.
 - m. Other issues that require discussion and coordination for timely completion of vertical transportation installation.
4. Pre-installation Meeting Minutes: GC to record in writing, minutes of meeting which will include items discussed decisions or agreements made, and identification of unresolved issues. GC will distribute meeting minutes within 5 working days of meeting date to all attending parties.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, and handle materials, components, and equipment in manufacturer's protective packaging.
- B. Store materials, components, and equipment off of ground, under cover, and in a dry location. Handle according to manufacturer's written recommendations to prevent damage, deterioration, or soiling.
- C. The GC may require the material to be moved at least once so coordination is important to minimize relocation.

1.9 TEMPORARY USE, PROTECTION AND CLEAN UP

- A. Temporary Use: VT Contractor shall allow temporary use of freight elevators by GC during construction period.
 1. Temporary use shall be limited to personnel travel only and limited material or store fixture delivery and shall commence at freight elevator turn over as defined in Project Schedule paragraph 1.11.
 2. Temporary use shall be limited to GC's authorized construction team personnel only.
 3. GC and VT Vendor shall meet all fire protection and emergency communication regulations per AHJ for the purposed of temporary construction use of freight elevators.
 4. VT Vendor shall acquire temporary use permit as required and regulated by AHJ.
- B. Protection: GC shall provide protection to freight elevators upon commencement of temporary use by GC as agreed upon with Target OSR and PM.
 1. GC shall instruct all personnel using freight elevators to avoid abusive treatment of elevator equipment, elevator doors and call buttons.
- C. VT Clean Up: Clean up by GC shall occur 1 week prior to Construction Complete Date as outlined in the project schedule.
 1. VT Contractor shall clean freight elevators as follows:
 - a. Removal of piston socks if used from hydraulic jack heads.
 - b. Car top shall be vacuumed clean.
 - c. Elevator pits shall be swept and vacuumed clean.

- d. All oil residues shall be removed from all elevator equipment surfaces within elevator hoist way and elevator machine room including car enclosure, doors, elevator pit, pit ladder, hydraulic piping, traveling cables, and related ancillary equipment. Usage of absorbent materials may be used to make surfaces residue free.
 - e. Elevator pit shall be swept clean.
 - f. Elevator guide rails shall be cleaned of all accumulated dirt and dust.
 - g. All elevator equipment shall be restored to like new condition prior to final Store turnover for public use.
- D. GC shall clean freight elevators as follows:
- 1. Removal of all temporary protection
 - 2. Any damage during temporary use period is the responsibility of the GC to repair.
- E. VT Contractor shall clean freight elevators as follows:
- 1. Removal of piston socks if used from hydraulic jack heads.
 - 2. Car top shall be vacuumed clean.
 - 3. Elevator pits shall be swept and vacuumed clean.
 - 4. All oil residues shall be removed from all elevator equipment surfaces within elevator hoist way and elevator machine room including car enclosure, doors, elevator pit, pit ladder, hydraulic piping, traveling cables, and related ancillary equipment. Usage of absorbent materials may be used to make surfaces residue free.
 - 5. Elevator pit shall be swept clean.
 - 6. Elevator guide rails shall be cleaned of all accumulated dirt and dust.
 - 7. All elevator equipment shall be restored to like new condition prior to final Store turnover for public use.

1.10 COORDINATION

- A. Coordinate installation of sleeves, block outs, inserts and items that are embedded in concrete or masonry for elevator equipment. Furnish inserts, templates and installation instructions and deliver to Project site in time for installation.
- B. Coordinate locations and dimensions of other work relating to elevators including pit ladders, sumps, and floor drains in pits; entrance subsills; mechanical ventilation; and electrical service, electrical outlets, lights, and switches in pits and machine rooms.

1.11 PROJECT SCHEDULE

- A. Equipment Completion: Complete installation of elevator equipment, including inspection, testing to follow schedule agreed upon at the Pre-Installation Meeting. And Owner instruction at dates prior to Turnover as follows:
 - 1. Hydraulic Freight Elevators: to follow the schedule agreed upon at the Pre-Installation Meeting.
- B. Notification of Completion: VT Contractor to provide written notification to GC of installation completion, as specified above, to allow for any Target required inspection outlined during the Pre-Installation Meeting

1.12 WARRANTY

- A. Special Manufacturer's Warranty: Written warranty, signed by installer agreeing to repair, restore, or replace defective equipment including labor within specified warranty period.
 - 1. Warranty Period: 12 months from the official acceptance date of the Authority Having Jurisdiction (AHJ) – [local elevator inspector and/or vertical transportation inspector] releases the equipment for sanctioned use. The Installer is responsible for completion of any deficiency list or conflicts with the specifications within 30 days of receipt and identification.

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PART 2 - PRODUCTS

2.1 MANUFACTURERS / INSTALLERS

- A. Acceptable Manufacturers / Installers for Hydraulic Freight Elevators:
 - 1. Mitsubishi Electric Elevator/Escalator Division.
 - 2. Schindler Elevator Corporation.
 - 3. ThyssenKrupp Elevator Company.

4. Independent VT Installation Vendors may be considered in addition to the specified VT vendors, but are required to be pre-approved by Target Project Construction Manager and Target's Vertical Transport Consultant.
- B. Acceptable Manufacturers for controllers:
 1. Motion Control Engineering.
 2. SmartRise
 - a. No other Substitutions.
- C. Acceptable Manufacturers for Door Equipment:
 1. Peelle if bi-parting freight doors.
 2. EMS if bi-parting freight doors.
- D. Acceptable Manufacturers for Elevator Cab Enclosures:
 1. Canton.
 2. MEI.
 3. Original Equipment Manufacturer (OEM), units per specification compliance.
- E. Acceptable Manufacturers for Elevator Platforms:
 1. Canton.
 2. MEI.
 3. Original Equipment Manufacturer (OEM), units per specification compliance.
- F. Acceptable Manufacturers for Pump Units:
 1. Canton.
 2. MEI.
 3. Original Equipment Manufacturer (OEM), units per specification compliance.
- G. Acceptable Manufacturers for Valves:
 1. EECO.
 2. Maxton.
- H. Acceptable manufacturers and products for Cab and Hallway Fixtures: Approved Fixture Shop Drawings on file.
 1. Innovation Series / Vandal Resistant.
 2. Provide way-finding graphics as indicated in Drawings.

2.2 MATERIALS

- A. Finish Materials: Provide the following materials and finishes for exposed parts of elevator cab enclosures, cab doors, hoistway entrance doors, and signal equipment as indicated:
 1. Stainless-Steel Sheet: ASTM A 240, Type 304.
 2. Stainless-Steel Bars: ASTM A 276, Type 304.
 3. Stainless-Steel Tubing: ASTM A 554, Grade MT 304.
 4. Cold-Rolled Steel Sheet: ASTM A 1008, commercial steel, Type B, exposed, matte finish, with factory-applied rust-inhibitive primer.
 5. Hot-Rolled Steel Sheet: ASTM A 1011, commercial steel, Type B, pickled, with factory-applied rust-inhibitive primer.
 6. Aluminum-Alloy Rolled Tread Plate: ASTM B 632, Pattern 1, alloy 6061-T6.
- B. Fasteners:
 1. Provide bolts, nuts, washers, screws, nails, rivets, and other fastenings necessary for proper erection and assembly of work.
 2. Fasteners shall be compatible with materials being fastened. Comply with requirements of the ASME 17.1 Code and be class 5 or better.
 3. Exposed:
 - a. Match adjacent material in appearance, finish, and color.
 - b. Countersink, unless otherwise indicated.
 - c. Screws: Provide Phillips flathead type.
 - d. Provide vandal resistant screws for Cab Operating Panel.
 4. Welding Electrodes: E70XX per AWS A5.1 or A5.5.

2.3 COMPONENTS

- A. General: Provide manufacturer's standard elevator systems except for specified controllers and door equipment. Where components are not otherwise indicated, provide standard components, published by manufacturer as included in standard pre-engineered elevator systems and as required for a complete system.
- B. Hydraulic Holeless Elevator Type Selection (See Article "1.3 Definitions" of this spec): Vertical Transportation provider to select the appropriate holeless elevator type which best suits the project's total vertical travel and overhead clearance constraints and requirements.
- C. Automatic Re-Synchronization: Provide automatic re-synchronization feature for each pair of hydraulic telescopic dual jack assemblies serving each elevator cab.
- D. Pump Units: Positive-displacement type with a maximum of 10 percent variation between no load and full load and with minimum pulsations. Provide the following:
 - 1. Submersible pump unit is allowed up to and including 50 HP motor pump unit. Dry pump unit are required for motors over 50 HP.
 - 2. 100 HP motors are allowed only on elevators with total rise of 13.72 meters (45 feet) or more.
 - 3. Double pump units are not allowed.
 - 4. Provide oil cooler with fan and constant circulation pump thermostatically controlled without software.
 - 5. Provide motor with Siemens EO5 electronic line starting. The motor to be capable of minimum 80 starts per hour.
- E. Hydraulic Silencers: Provide hydraulic silencer containing pulsation-absorbing material in a blowout-proof housing at pump unit. A muffler with a baffle is not allowed. An air charged unit or non baffled unit is required.
- F. Piping: Provide size, type, and weight piping recommended by manufacturer, and provide victaulic fittings to minimize sound and vibration transmissions from power unit.
 - 1. Provide dielectric couplings at plunger/cylinder units.
 - 2. Casing for Underground Piping: PVC pipe complying with ASTM D 1785 joined with PVC fittings complying with ASTM D 2466 and solvent cement complying with ASTM D 2564.
 - 3. Installation of PVC lining to conform with OSHA 29 CFR 1926.21 (b)(6)(ii) requirements for Confined Spaces.
- G. Inserts: Furnish required concrete and masonry inserts and similar anchorage devices for installing guide rails, machinery, and other components of elevator work where installation of devices is specified in another Specification Sections.
- H. Protective Cylinder Sleeve: PVC pipe complying with ASME A17.1, of sufficient size to provide not less than 1-inch clearance from cylinder, and extending above pit floor, and having inspection tubes or a method for proper inspection.
- I. Cab Frame and Platform: Welded steel units.
 - 1. Provide special heavy-duty units where indicated for power truck loading, designed to withstand impacts and wheel loadings indicated.

2.4 OPERATION SYSTEMS

- A. Controllers: Provide Motion Control Engineering, MCE HMC 2000 Controllers or approved equals with battery lowering device integrated into standard enclosure. Controllers for each elevator or group of elevators as required, to provide type of operation system indicated.
 - 1. Alternate: Manufacture or Installer SHALL NOT propose or provide a voluntary alternate using the manufacturer's standard microprocessor operation systems.
- B. Elevator Operation:
 - 1. Single Automatic Operation, as defined in ASME A17.1/CSA B44.
 - 2. Door Operation: Doors and gates to open automatically and sequentially when a cab arrives at the landing. Control door closing using either auto close or constant pressure buttons on cab and at each hoistway entrance.
- C. Auxiliary Operations: In addition to primary operation system features, provide the following operational features for elevators where indicated.

1. Special Door Operation: Provide automatic closing of doors and gates after an adjustable time period provided by the on site PHC with a range of 30 to 300 seconds, set to initial setting of 30 seconds. The adjustable timer shall not be in the software where new Eproms would be required to change it. Sound bell prior to initiation of door close per code. The bell must be loud enough to provide adequate protection. Provide "Cab Hold" push button on elevator control panel which will retain the Freight Elevator at current floor landing with freight doors in the open position. The door close button shall override the auto close feature and the cab hold feature, and release the elevator to respond to hall or cab calls.
 2. "Flow-Thru" Operation: Door operation for elevators with doors at front and rear side of cab with access on one side on each level, description and function as follows:
 - a. "Flow-thru" operation is multi-directional, flow can be in either direction. Enter on one side of hoistway and exit on the other side of hoistway.
 - b. Doors occur on only one side of hoistway at each floor level.
 - c. Doors at each level are to be considered both Ingress openings and Egress openings.
 3. Standby-Power Transfer (As required): In the event of normal power failure, provide controls to automatically lower each cab nonstop to the lowest landing or primary exit level. Provide 12 volt D.C. battery units installed in machine room for standby power including solid-state charger and testing means mounted in a common metal container. Battery to be rechargeable lead acid or nickel cadmium with a 10-year life expectancy.
 - a. Upon the failure of normal power, the elevator shall be lowered to the lowest landing or primary exit level. Upon arrival, the elevator doors shall open automatically and remain open until normal operation is resumed. The elevator shall then become inactivated.
 - b. Upon restoration of normal power supply to the building, the elevator shall automatically resume normal operation.
 4. Independent Service: Key switch in cab control station allows it to respond only to cab calls. Key cannot be removed from key switch when cab is in independent service. When in independent service, doors close only in response to the door close button.
 5. Firefighter's Service: Per ASME A17.1/CSA B44 to operate and recall elevators to designated or alternate designated floors in fire or other emergency condition. Connect sensor signal wiring from hoistway or machine room connection point to controller terminals. Provide similar operation and fixtures on all elevators. Operate visual/audible signal until return is complete or automatic operation restored.
 6. Standby Lighting and Alarm: Cab-mounted, battery unit with solid-state charger to operate fan, alarm bell and lighting, per Code. Battery to be rechargeable with 5-year minimum-life expectancy. Provide spring return test button in service cabinet of cab station which causes illumination of standby lighting.
- D. Security Features: In addition to above operational features, provide the following security features, where indicated. Security features shall not affect emergency firefighters' service.
1. Security Camera Capability: Provide a RG59U Coaxial Cable terminated on car top in a junction box clearly labeled and identified. Terminate cable in machine room outside the controller attached to the electrical duct in a junction box clearly labeled and identified. Provide a 110-volt outlet at the camera box location on car top.
 - a. Elevator technician is responsible for terminating cables in the controller or in the junction box above the controller.
 - b. Elevator technician is responsible for mounting the security camera (Owner Furnished) in the canopy or the corner opposite the car control panel. Provide wiring from the camera to the junction box. Provide assistance to camera technician as required for final connections.
 2. Security Access (As Required): to be reviewed by the Target PM with Target Asset Protection and Store Operations to determine access type (key switch versus key pad) and operation. Information to be provided as part of the Pre-Installation Meeting
 - a. Security Access Key Switch (As Required): VT Contractor provided key switch located in designated Store hall pushbutton station. When used, keyswitch will activate and deactivate car and hall push buttons serving select Floor levels. Elevator doors at Select Floor levels will be secured and inaccessible.
 3. Digital Keypad Operation for Freight Elevator (As Required): Wall mounted digital keypad to allow secure, multi-functional operation of elevator. Keypad unit to be mounted near entrance jamb as indicated on Drawings. Provide one keypad for elevator (ELEV-X) as indicated on drawings.
 - a. Acceptable Manufacturer and Products for Keypad System:
 - 1) Essex Electronics Inc.
Tel: 800-539-5377
Website: www.keyless.com

- 2) Key Pad System: KE-1000-T4, Mark III Series, with Model TP-3/4 S, twelve digit keypad, with stainless steel bezel.
 - (a) Keypad to contain a minimum quantity of (4) four programmable digital code inputs/outputs.
 - (b) Additional outputs as part of model to be used for future options and functions.
 - (c) The keypad to have the capability to change codes on site without the use of software.
 - (d) Power: 24v. DC.
- 3) Accessories:
 - (a) ERM Unit: Encoded Relay Module; to be mounted in Machine Room or Hoistway.
 - (b) Transformer: Manufacturers standard for 24v DC power.
 - (c) Include proper wiring, box enclosure and interface with the controls.
- 4) Comparable products from other manufacturers with approval.
- b. Operational Modes: Programmable Input Codes trigger the following separate elevator operation modes.
 - (a) Exclusive Team Member Use Mode #1: This mode shall recall the elevator to the floor where the key-pad is located, and place the selected elevator into independent service. Hall button circuitry for this elevator shall be deactivated from use. Elevator car buttons will remain activated and will allow the elevator to respond. This independent service mode shall allow the operator to use the elevator by initiating car call buttons and using the door close and door open buttons to operate the elevator. This mode shall have a field programmable timer with a setting of "OFF" and a timer range of 15 to 60 minutes, to automatically restore the elevator to passenger use mode #2, without entering a keypad code.
 - (b) The timer should be initially set to 15 minute time period, to automatically restore the elevator to passenger use mode #2, without entering a keypad code.
 - (c) Restore Passenger Use Mode #2: Activation of this mode shall restore the elevator to general passenger operating use. All hall call button circuitry are re-activated. This mode shall recall the elevator that is on cart retrieval use mode #1.
 - (d) Initiate Security Mode After Business Hours #3: This security mode shall remove the elevator from normal passenger use mode and remove the elevators from shopping cart retrieval operation mode. Activation of this mode will return the elevator to the floor at keypad location, open the elevator doors to verify the elevator is vacant, and after a normal door open dwell time of 6 to 10 seconds, close the door. All hall call circuitry will be deactivated. Elevator car will not respond to hall or car calls. This security mode will deactivate modes #1 and #2.
 - (e) Restore Non-Security Mode During Business Use #4: Numeric code for this mode must be entered to restore elevator to normal passenger use mode #2, or to allow cart retrieval mode #1 to be activated. All hall and car call circuitry will be activated for general passenger use.
4. Car Call Security Access Keyswitch: Elevator Vendor provided key switch located in designated hall pushbutton station. When used, keyswitch will activate and deactivate car and hall push buttons serving floor levels. Elevator doors will be secured and inaccessible.
5. False Landing Operation: Provide a False Landing operation that automatically dispatches elevator car to an in-between floor position (False Landing). The False Landing hoistway location depends on climate, number of stops and jurisdiction. Submittals will identify the optimal location for False Landing car position. Fire fighter's operation and independent service shall override the false landing operation in both modes.

2.5 CAB SIGNAL EQUIPMENT

- A. Cab Control Station Components: Provide one, fully recessed, cab control station with applied metal faceplates. The faceplate shall not extend to the floor but be terminated above the top bumper rail.
 1. Pushbuttons: 3.175 mm (1/8") raised, illuminated pushbuttons for registration of the cab stops. Approved drawings of fixtures are on file at both manufacturers. Flag the Owner's preferences, modify only upon approval.
 2. Alarm Button: Locate at code height of 889 mm (35 inches) to center or local AHJ interpretations and requirements in the cab station to ring an alarm bell located on elevator. Actuation will illuminate button and sound distress signal.
 3. Stop Switch: with engraved markings to show "run" and "stop". Locate in main cab station faceplate. Actuation will illuminate alarm button and sound distress signal
 4. Door Open Button: when activated will stop closing motion of doors and cause them to return automatically to their fully open position.

5. Door Close Button: When activated will close the doors if bi-parting freight doors, will short out door time even on auto close feature. A momentary activation of the door close button will allow the doors to close immediately.
 6. Door Reset Button: required either in the hall or cab due to auto close feature. Must comply with local AHJ interpretations.
 7. Fire Fighters Service Panel and Key Switch: Provide one Fire Fighters Service Panel with all buttons, service key switches, call cancel button, door open, door close, fire hat and other devices, light jewel and all devices as required by Code or local AHJ.
 8. Firefighter's Operation Service Panel: Lockable flush cover plate in control station containing the following controls.
 - a. Phase II key switch.
 - b. Engraved instructions on inside of fire service cabinet.
 - c. Door open and door close buttons.
 - d. Emergency stop switch.
 - e. Call cancel button.
 - f. Indicator light; visual signal firefighter hat symbol.
 9. Service Panel: Lockable flush cover plate in control station containing the following minimum controls.
 - a. Inspection key switch, conforming to the ANSI Code.
 - b. Light switch may be Rocker, toggle or keyed.
 - c. Test button for emergency light.
 - d. Two-position exhaust blower switch may be rocker, toggle or keyed.
 - e. Duplex 120 volt, A.C., GFCI electrical outlet.
 - f. Access enable key switch
 - g. Two spare toggle switches for future use.
 10. Emergency Communication System: Provide system that complies with ASME A17.1/CSA B44 and the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines (ADAAG)". On activation, system dials pre-programmed number of monitoring station and identifies elevator location to monitoring station. System provides two-way voice communication without using a handset and provides visible signals that indicate when system has been activated and when monitoring station has responded. System to be flush mounted in control panel with the following components:
 - a. Speaker Grille.
 - b. Microphone.
 - c. Activation Button. Programmed to the Elevator Contractor's 24 assistance number. There shall be no cost for this service
 - 1) At Activation Button provide a 6.35 mm (1/4 inch) raised stainless steel collar surround, this collar projects beyond face of Activation Button and protects from inadvertent activation. Provide collar for either round or square Activation Buttons.
 - d. Visible signal Light.
 - e. Emergency Light.
 11. Car Position Indicator: Provide 50.8 mm (2 inch) digital-display type, or segmented type with travel direction arrows. Also provide audible signal to indicate to passengers that cab is either stopping at or passing each of the floors served. Provide synthesized voice as required by Jurisdiction.
 12. Mark buttons and switches with manufacturer's standard identification for required use or function that complies with ASME A17.1/CSA B44.
 13. The fire fighters Phase II service panel cabinet to be identified by engraved faceplate.
 14. Mount controls at heights complying with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines (ADAAG)".
- B. Signage: Provide the following engraving with black paint fill. Size and style as approved by Architect.
1. Elevator Car Control Stations:
 - a. "No Smoking" at the top of the main car station.
 - b. Elevator number at the top of the car station.
 - c. Elevator capacity in pounds at the top of the main car station.
 - d. Engrave cab operating panel with Phase II fire service verbiage, per ASME A17.1/CSA B44.
 - e. Freight elevator Class I loading/usage requirements as required by Code.
 - f. Incorporate inspection certificate window with clear plastic lens, and mounting frame above buttons on car station if or as required by Authority Having Jurisdiction.

- C. Mark buttons and switches with manufacturer's standard identification for required use or function that complies with ASME A17.1/CSA B44.
- D. Mount controls at heights complying with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines (ADAAG)".

2.6 HALL SIGNAL EQUIPMENT

- A. Hall Push-Button Station Components:
 - 1. Provide a single riser for each elevator at all floors with flush-mounted faceplates constructed of satin stainless steel and flush mounted, vandal-resistant buttons. Each fixture to contain pushbuttons for each direction of travel which illuminate to indicate call registration Incorporate vandal-resistant, "in-use" jewels, "door open", "door close", and "reset" buttons for control of doors with pushbutton fixture.
 - 2. Call Station Pictograph Signs: Provide signs matching hall push-button stations with text and graphics according to ASME A17.1/CSA B44, Appendix H.
 - 3. Hall Lanterns: Provide units with illuminated arrows, but provide single arrow at terminal landings.
 - 4. Provide units with flat stainless steel faceplate for mounting with body of unit recessed in wall and with illuminated elements.
 - 5. Provide flush vandal resistant units.
 - 6. Place lanterns beside each hoistway entrance, as indicated on Drawings. Mount at 72 inches above finished floor.
 - 7. With each lantern, provide audible signals indicating car arrival and direction of travel. Signals sound once for up and twice for down Chime unit shall be an adjustable volume unit.
- B. Hoistway Access Switches: Mount in wall adjacent to entrance frame side jamb at all top terminals and bottom terminals. Provide stainless steel faceplate.
- C. Security Access Keyswitch: Elevator Vendor provided key switch, integral with push button plate on Store Level.
 - 1. Faceplate to have the proper studs mounted or stop provided to prevent the key switch cylinder from turning.

2.7 DOOR REOPENING DEVICES

- A. Team, Passenger, Dual Use, Freights Nudging Feature: The scanners shall be installed in fail safe mode during normal operations. This means that the doors shall remain open as long as there is an obstruction in the path of the doors. The nudging shall be activated only to fulfill or during Fire Service requirements. After car doors are prevented from closing for a predetermined adjustable time, through activating door reopening device, a loud buzzer shall sound and doors shall begin to close at reduced kinetic energy.

2.8 FREIGHT ELEVATOR CAB ENCLOSURES

- A. General: Provide cab enclosures of freight loading classes, sizes, door types, and opening sizes indicated. Include ventilation, lighting, finishes, access doors, thresholds, trim, and accessories. Fabricate cab with recesses and cutouts for signal equipment.
- B. Side and Rear Walls: Reinforced 12 gauge, (2.286 mm) (.090") furniture steel pan sections, 914.4 mm (36") wide maximum, with baked enamel finish.
- C. Canopy: Reinforced 12 gauge (2.286 mm) (.090") furniture steel with hinged exit and baked enamel finish.
- D. Interior Finish: Manufacturer's standard baked enamel finish.
 - 1. Color with Architects approval.
- E. Finish Flooring: 6.35 mm (1/4 inch) thick, checkered plate, non-skid aluminum. Install floor with seams to sides of cab. Seam shall not be in the center of the cab. Subflooring shall be marine grade plywood.
- F. Freight Elevator Bumper Rails: Double row 304.8 mm wide x 25.4 mm thick (12" wide x 1" thick) oak, two sides and rear wall if in line openings, double row on two sides if front and rear.
 - 1. One row 50.8 mm (2") off finish floor to bottom of rail and second row 508 mm (20") off finish floor to bottom of rail.
 - 2. Fasten to wall at maximum 304.8 mm (12") intervals with a flush or recessed bolt.
- G. Ventilation: Two-speed exhaust fan.

- H. Car Top Railings: Provide standard railings complying with ASME A17.1/CSA B44 on cab tops where required by ASME A17.1/CSA B44.
- I. Car Top Inspection Station: Provide standard cab top inspection station complying with ASME A17.1/CSA B44 on cab tops where required by ASME A17.1/CSA B44. The assembly shall be mounted on top of the crosshead or on the gate crossover angle.
- J. Car Top Stop Switch: An additional stop switch is required on the car top. The switch shall be accessed from the landing side of the car top access key switch. The stop switch shall be within reach of the entrance to secure the car without stepping on the canopy to get to the inspection station.
- K. Car Lighting: Adequate lighting to provide a minimum of 10-foot candles of illumination on the cab sill.
 - 1. Recessed mounted LED lights with wire guards or enclosures. Lights must have proper protection per code. Include step guards on cab top.
- L. Car Gates: Vertically sliding, power operated, counterweighted steel car gate equipped with adjustable, replaceable shoes operating in steel guides. Fabricate gate panels with minimum #10 gauge metal wire safety-mesh on steel frame. Gate to be 14-gauge solid sheet steel to 914.4 mm (36") height, internally reinforced on 457.2 mm (18") centers. Tracks shall be properly knee braced back to the crosshead on both sides.
 - 1. Gate and Door Operation:
 - a. Car gates and hoistway doors to open automatically and sequentially, or by momentary pressure on the "open door" button. Doors and gates shall close by means of an auto close feature, momentary or continuous pressure on the cab or corridor "close door" button.
 - b. Doors and gates to also close automatically by means of an "auto time close feature". Timer to be adjustable from 30-300 seconds. Timer to be adjustable on site without changing Eproms. Prior to starting auto-time close, the alarm bell shall sound, notifying freight handlers the doors are starting to close. Momentary activation of "close door": buttons shall activate the auto close feature.
 - 2. Car Gate Electric Contact: Electrical contact to operate in conjunction with cab gate so that elevator cannot operate unless hoistway doors and gate are closed or within tolerance allowed by Code. Locate contact so as to prevent tampering from inside the car.
 - 3. Door and Gate:
 - a. Operators: Closed loop operation of individual door and gate. Arrange so doors can be opened from inside car in case of power failure.
 - b. Opening and Control Devices:
 - 1) Sequential Infrared reversing safety scanner reverses gate if it senses a person or object. Install the scanner in a "fail safe" mode for normal operation. As long as there is an obstruction in the path of the scanner beam, the gate shall remain open.
 - 2) Gate nudging feature to be only available during fire fighter emergency operation. Nudging feature shall be in failsafe mode and automatically engaged upon activation of phase I fire emergency alarm. Gate nudging feature to remain inoperative during normal, non-emergency operation.
 - 3) Gate boot: canvas or rubber. Canvas boot fastened at 76.2 mm (3 inches) on center minimum. Electronic safety edge boot is not required.
 - 4) The hoistway doors astragal shall be rubber, glued in addition to pressure fitted into a channel or shall be bolted in place. Provide Gorilla tape and straddle the rubber astragal and bottom gate channel.
 - 4. Gate Finish: Factory finish of either:
 - a. Baked Enamel, standard color by manufacturer.
 - 1) Color: to match cab interior color.
 - b. Powder coat, standard color by manufacturer.
 - 1) Color: to match cab interior color.

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2.9 FREIGHT HOISTWAY ENTRANCES

- A. General:
 - 1. Structural-steel frames and sills for hoistway entrances are specified in Division 5 Section, Metal Fabrications.
 - 2. Provide complete entrance assemblies bearing UL fire labels.
 - 3. The truckable sill angle shall be at the same plane as the landing level.
 - 4. The installer shall not install the door panels unless the running clearances are within code. Assist the General Contractor in extending a flush sill, modifying or adding steel as needed.

- B. Vertical Bi-Parting Freight Doors: Labeled steel doors, set into steel angle frames. Provide with safety astragals, vision panels, and truckable sills.
 - 1. Electric Power Door Operators: Electric power operator located inside the hoistway and arranged to open or close the door at a speed of not less than one foot per second.
 - 2. For floor-to-floor heights of 914.4 mm (14 feet) or less, provide extended sill by-passing bi-panel freight doors as required to accommodate proper door operation and safe clearances.
 - 3. Electric Interlocks:
 - a. Equip doors with interlocks to prevent operation of elevators unless doors are closed and locked.
 - 4. Freight Door and Gate Protection: Provide a scanner by Janus Elevator Products Inc., model Pana40 or preapproved equal.
 - 5. Nudging Feature: The scanners shall be set in fail safe mode for normal operations. Doors and gates shall remain open as long as there is an obstruction in the path of the doors as trigger by scanner. Nudging feature shall be activated only during Fire Service operation or modes. The nudging feature shall, after cab doors and gates are prevented from closing for a predetermined adjustable time, through activating door reopening device, a loud buzzer shall sound and doors shall begin to close at reduced kinetic energy.
 - 6. Hoistway Door and Frames
 - a. Provide manufacturer's standard labeled units.
 - b. Hollow metal Frames: Factory prime painted, field applied finish paint.
 - c. Hollow metal Doors: Factory prime painted, field applied finish paint.
- C. Fascia and Toe Guards: 14 gauge furniture steel with flat black enamel finish. Paint fire floor identifying numbers per Code. The toe guard shall have the complex unit stenciled on it.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine elevator areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
 - 1. Verify critical dimensions, and examine supporting structure and other conditions under which elevator work is to be installed.
 - 2. Adverse conditions or modifications should be identified and conflicts itemized per respective Code rule.
 - 3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General:
 - 1. Install each equipment item in accordance with accepted Manufacturer's procedures, referenced codes, and specifications.
 - 2. Install machine room equipment with clearances in accordance with referenced codes and specifications.
 - 3. Install items so they may be easily removed for maintenance and repair.
- B. Welded Construction: Provide welded connections for installing elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, and replacement of worn parts.
 - 1. Comply with AWS standards for workmanship and for qualifications of welding operators.
- C. Sound Isolation: Db levels not to exceed 55 dba at any point in the hoistway with cab fan off. Provide isolating filters designed to effectively prevent transmission of vibrations and thereby eliminate sources of structure-borne noise from elevator system to comply with dba levels.
- D. Isolate the piping through the hoistway wall so any vibrations or pulsations do not resonate.
- E. Install piping above floor, where possible. Where not possible, install underground piping in Schedule 40 PVC pipe casing assembled with solvent-cement fittings.
- F. All hydraulic pipelines shall be identified at 3048 mm10 foot intervals to comply with ASME A17.1.
- G. Provide floor and wall supports to make sure the victaulic fittings, piping is secure and does not flex during the operation of the elevator.

- H. Lubricate operating parts of systems as recommended by manufacturers.
- I. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with cabs. Where possible, delay installation of sills and frames until cab is operable in shaft. Reduce clearances to minimum, safe, workable dimension at each landing.
- J. Leveling Tolerance: 6.35 mm (1/4 inch), up or down, regardless of load and direction of travel.
- K. Set hoistway door stops so door is flush with finished floor surface at landing.
- L. Performance Criteria Freight Elevator.
 - 1. Door open time 7.4 seconds.
 - 2. Door Close time 7.4 seconds.
 - 3. Door open dwell time on a car call 30 seconds.
 - 4. Door open dwell time on a hall call 30 seconds.
 - 5. Activation of door close button shall cancel dwell time.
 - 6. Floor to floor times, contract speed with leveling zone of 6 to 10 inches maximum either direction.
 - 7. Nudging set in fail safe mode during normal operation.

3.3 FIELD QUALITY CONTROL

- A. Acceptance Testing: On completion of elevator installation and before permitting use (either temporary or permanent) of elevators, perform acceptance tests as required and recommended by ASME A17.1/CSA B44 and by governing regulations and agencies.
- B. Advise OSR and authorities having jurisdiction in advance of dates and times tests are to be performed on elevators.
- C. Provide a copy of the test results to OSR at the same time they are provided to the PCA.
- D. The project will be subject to Target's VT commissioning process and equipment will be inspected by a Target Representative, an Elevator Consultant or both. Any deficiency list will be required to be addressed and completed within 14 days of receipt unless an alternate timeline is approved by Target.

3.4 DEMONSTRATION

- A. Instruct Owner's personnel in proper use, operations, and daily maintenance of elevators. Training shall be scheduled and may take up to a day. Includes all functions of securing the elevators, key switch function, or special security operations.
- B. Provide two (2) Training Sessions: First training session is at Turnover; and Second training session is determined by Target and is to occur after Turnover at the discretion of Target VT Department.
- C. Provide three (3) Procedure Manuals for training or vendor sponsored interactive website training modules.
- D. Review emergency provisions, including emergency access and procedures to be followed at time of operational failure and other building emergencies.
- E. Train Owner's personnel in procedures to follow in identifying sources of operational failures or malfunctions.
- F. Provide a copy of ASME 17.4 or a specific evacuation plan for on-site use.
- G. Co-ordinate with Owner on requirements for a complete elevator maintenance program.
- H. Make final check of each elevator operation with Owner's personnel present and before date of Store Turnover. Determine that systems and devices are functioning properly.

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3.5 PROTECTION

- A. Do not use freight elevators for construction purposes unless authorized by General Contractor and all code compliance items have been met and protective measures to equipment have been made.
 - 1. Protect finishes from damage.

2. Provide full maintenance service by skilled, competent employees of elevator installer for elevators used for construction purposes. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper elevator operation at rated speed and capacity. Use same parts and supplies as used in the manufacture and installation of original equipment.
3. Provide protective coverings, barriers, devices, signs, and other procedures to protect elevators. If, despite such protection, elevators become damaged, engage elevator installer to restore damaged work so that no evidence remains of correction work. Return items that cannot be refinished in the field to the shop, make required repairs and refinish entire unit, or provide new units as required.

3.6 FREIGHT ELEVATOR SCHEDULE

- A. Freight Elevator No(s): ELEV- X
 1. Type: Hydraulic Borehole/Hydraulic Holeless.
 2. Platform Dimensions: 3759 mm wide x 2743.2 mm deep (12'-4" wide x 9'-0" deep), with orientation as indicated on Drawings.
 3. Rated Load: 3628.75 kg (8000 lb)
 4. Freight Loading Class: Class C1.
 5. Rated Speed (Up & Down): 0.38 mps (75 fpm).
 6. Openings: See Drawings.
 7. Stops: See Drawings.
 8. Total Travel Distance: See Drawings.
 9. Floor-to-Floor Elevations:
 - a. 1 ---- +20
 - b. P1---- -12
 10. Operation System: Automatic Operation.
 11. Machine: Submersible unit 50 HP motors or less. Provide dry unit for motors over 50 HP..
 12. Motor Control: Electronic Siemens EO5.
 13. Power Characteristics: 480 Volt - 3 Phase - 60 Cycle.
 14. Entrances:
 - a. Entrance Size: 3657.6 mm wide x 2438.4 mm high (12'-0" wide x 8'-0" high).
 - b. Type: Automatic powered, vertical bi-parting doors.
 - c. Finish: Prime painted steel.
 15. Door and Gate Operation: Automatic Door Operation, High Speed, Heavy Duty, Individual AC or DC Door and Gate Operators; Constant Pressure Close, Automatic Open. Sequential Door Operation.
 16. Door and Gate Protection: Door and gate astragals and infrared full length array sensor. Install scanner in "fail safe" mode for normal operation.
 17. Cab Enclosures:
 - a. Height: Cab height to canopy 2743.2 mm (9'-0").
 - b. Doors: Vertical, power operated gates and cab gates with scanner.
 - c. Walls and Ceiling: Enameled steel.
 - 1) Color: Beige.
 - d. Floor: Checkered plate, non-skid Aluminum.
 - e. Canopy: Enameled steel with hinged exit.
 - f. Base: Angle for wall panels.
 - g. Bumpers: Double row, oak, 304.8 mm wide x 25.4 mm thick (12" wide x 2" thick), sides and rear.
 - h. Lighting: Recessed mounted T-8 florescent lights with guards. Requires step guards above.
 18. Signals: Vandal resistant.
 - a. Registration Lights: cab and corridor pushbuttons, single corridor riser with "in use" lights.
 - b. Door Close Buttons, Door Open Buttons, Door Reset: in cab and at each landing.
 19. Emergency Communication System:
 - a. Vandal resistant, self-dialing, ADA compliant telephone, shielded wiring from box in each cab to each cab controller in elevator machine room. Mount electrical box above controller for connections.
 - b. In-cab telephone wired to Team Service Center (TSC) @ 1-800-633-1609.
 20. Additional Features: As follows:
 - a. Special door operation.
 - b. Car top inspection station.
 - c. Manual lowering valve.

- d. Hoistway access switches.
- e. Standby power transfer.
- f. Emergency operation ASME A17.1 fireman's service, including alternate floor return.
- g. Signage pertaining to usage of freight elevator.
- h. Platform isolation - jack to platen connection.
- i. Hydraulic pump assembly and controller sound isolation.
- j. Oil cooler on hydraulic pump units.
- k. Cylinder supports as required.
- l. Car top railings as required by Code.
- m. Installation and hook-up of security camera in elevator cab - provide RG59U Coaxial Cable in traveling cable, and 110 volt power supply in cab - camera supplied by owner.
- n. Wiring diagrams, operating instructions, and parts ordering information.
- o. Elevator identification, embossed metal, numeric and tactile, mounted to entrance jamb.
- p. No visible company name or logo.

END OF SECTION

SECTION 14 3100 ESCALATORS

PART 1 - GENERAL

1.1 SUMMARY

- A. **Section Includes:**
 - 1. Two escalators, 1016 mm (40 inch) wide step.
 - 2. Coordination with installation of Cart Conveyors, as specified under Section 14 5013.

1.2 RELATED ITEMS

- A. Section 03 3000 - Cast-in-Place Concrete; for setting sleeves, inserts, and anchoring devices in concrete.
- B. Section 05 1210 - Structural Steel Framing Fabrication; for attachment plates, angle brackets, and other preparation of structural steel to support escalator trusses.
- C. Section 08 3100 - Access Doors; for wall and ceiling access panels and access doors in escalator enclosures.
- D. Section 09 2116 - Gypsum Board; for enclosures of and finishes applied to exterior of escalators.
- E. Division 26 Sections for electrical service to escalators, including disconnect switches.

1.3 DEFINITIONS

- A. **Defective Escalator Work:** Operation or control system failures; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; the need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.

1.4 PERFORMANCE REQUIREMENTS

- A. **Rated Speed:** 0.457 to 0.509 mps (90 to 100 fpm)
- B. **Braking Performance:** Provide brakes that stop escalator in up-running mode at a rate no greater than 0.9144 mps (3 ft. per second).
- C. **Sound Level:** Escalators to operate at or below 65 DbA measured 1524 mm (5 feet) above the escalator at all locations with no load and full load. Measurement will be made with one escalator at a time running.
- D. **Tool Access:** Provide tool.

1.5 REFERENCES

- A. American Society for Testing of Materials, (ASTM):
 - 1. ASTM A 366, "Specification for Steel Sheet, Carbon, Cold-rolled, Commercial Quality".
 - 2. ASTM A 569, "Specification for Commercial Steel (CS) Sheet and Strip, Carbon (0.15 Maximum Percent), Hot Rolled".
 - 3. ASTM A 666, "Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar".
 - 4. ASTM C 1048, "Specification for Heat-Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass".
- B. American Society of Mechanical Engineers, (ASME):
 - 1. ASME A17.1/CSA BB44, "Safety Code for Elevators and Escalators". Latest Adopted version of Prevailing Code Authority; or no later than the 1996 version with all supplements.
- C. National Fire Protection Agency, (NFPA):
 - 1. NFPA 70, National Electrical Code.

1.6 SUBMITTALS

- A. **Product Data:** Include capacities, sizes, performance, operation, safety features, finishes, and similar information.

1. Escalators and pits.
2. Operation, control, and signal systems.

B. **Shop Drawings:** Show plans, elevations, sections, and large scale details indicating service at each landing, coordination with building structure, cart conveyors and relationships with other construction. Indicate variations from specified requirements, maximum loads imposed on building structure at points of support, and maximum and average power requirements. Indicate access and ventilation for escalator machine space and wellways.

1. Obtain copy of Cart Conveyor Shop Drawings from supplier for coordination of installation with escalators
2. Provide electrical, structural, and mechanical data including BTU output.
3. Any discrepancy with the sizes or dimensions of escalator or associated appurtenances must be identified and noted on Shop Drawings and resolved before proceeding.
4. **Shop Drawings Submittal Process:** Submit shop drawings for all Vertical Transportation components for Project together in one package including elevators and controls, escalators, cart conveyors and material handling units as applicable.

a. **Manufacturer:**

- 1) Manufacturer shall provide Vertical Transportation Shop Drawings. They shall meet Code and project specific requirements from the Contract Documents. Drawings not prepared and signed by manufacturer will be returned as unacceptable.
 - (a) Manufacturer shall assign a Project Number or Name referencing this specific project. Indicate Number or Name on Shop Drawings. All drawings or each submittal must use the Elevator complex number, location and job number.
 - (b) **Copies:** Submit electronic copies as a PDF. Manufacturer shall send Shop Drawings to Project General Contractor (GC) for review and approval.

b. **General Contractor:**

- 1) General Contractor shall review, stamp and sign Shop Drawings for all Vertical Transportation components.
- 2) General Contractor shall retain an electronic copy and submit (1) electronic signed copy through the submittal process to the Architect, Target Project Manager (Target PM) and Owner's Vertical Transportation Consultant (VT Consultant) for review and approval. Identify Project name and number on transmittal.

c. **Target's Vertical Transportation Consultant (VT Consultant):**

- 1) HKA Elevator Consulting, 23211 South Pointe Drive, Laguna Hills, CA, Phone 949-348-9711.
- 2) VT Consultant shall review, stamp and sign Shop Drawings for all Vertical Transportation components.
- 3) VT Consultant shall scan the signed printed copy for their files and submit the stamped signed electronic copy to the Project's Architect of Record for review and approval. Identify Project name and elevator number and location on transmittal.

d. **Architect of Record:**

- 1) Architect of Record shall review, stamp and sign Shop Drawings for all Vertical Transportation components.
- 2) Architect will distribute a copy of their reviewed Shop Drawings to the project engineers (Structural, Mechanical, and Electrical), for review. Architect will receive the engineer reviewed copies and will compile all review comments to the Architectural reviewed Shop Drawings (this document then becomes the "original signed printed copy").
- 3) Architect of Record to photo copy the compiled signed printed copy for Architect's file and forward the original signed printed copy to General Contractor.

e. **General Contractor:**

- 1) General Contractor shall scan or present the signed copy for their files and submit the original signed printed copy or electronic version, with corrections noted from GC, VT Consultant, Architect, and Engineers to Manufacturer for corrective action as necessary. Refer to Section 01 3300 – Submittal Procedures for definitions of corrective actions.
- 2) Resubmit corrected Shop Drawings to Architect of Record and VT Consultant as applicable
- 3) If no corrective action was required, notify Manufacturer of approval for fabrication.

f. **In-Fill Grout Pocket Shop Drawings:**

- 1) Provide Shop Drawings of the in-fill grout pocket details as shown on Drawings, these Shop Drawings are to be submitted and approved along with the Escalator Shop Drawings.

- C. **Maintenance Manuals:** Provide written information necessary for proper maintenance and adjustment of the equipment prior to final acceptance.
 - 1. Straight-line wiring diagram of as-installed escalator circuits with index of location and function of all components. Provide three neatly bound final corrected sets within 30 days after job acceptance for the Owner's file.
 - a. Provide additional copy in electronic format to Target PM who will provide copies to Target Property Development, Vertical Transportation Lead Program Manager.
 - 2. Lubricating instructions, including recommended grade of lubricants. Provide three bound copies.
 - 3. Parts catalogs for replaceable parts including ordering forms and instructions. Provide three bound copies.
 - 4. MSDS sheets for all lubricants, cleaners and other materials.
- D. **Keys:** Ten (10) sets of each key for each key switch or device. Including but not limited to the service panel, starting keys, reset keys and controller keys. Include inspection pendant. All keys shall be properly tagged. Provide plastic tags or brass key tags, PAPER TAGS ARE NOT ALLOWED.
- E. **Certificates and Permits:** Provide Owner with inspection and acceptance certificates and operating permits as required by authorities having jurisdiction for normal, unrestricted use of escalators.
- F. **Glass Cleaning Policy:** Manufacturer to advise Owner and provide an acceptable glass cleaning policy for glass balustrades to comply with ASME 17.1 Section 1200.
- G. **Barricades:** Escalator contractor shall provide escalator barricades to be made permanently available to Target personnel during construction and after Store turnover to assure an unsafe condition can be secured from pedestrian traffic. Provide quantity of barricades to secure both ends of all escalators simultaneously. Barricades at site to assure an unsafe condition can be secured against pedestrian traffic when units need to be removed from service.
- H. **Service Tool:** Provide a service tool of the highest level, site restrictive, non-degenerative password nor timeout feature. Repairable for (5) years at no additional coat.

1.7 QUALITY ASSURANCE

- A. **Installer Qualifications:** Escalator manufacturer or a qualified installer approved by escalator manufacturer who has completed escalator installations similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance
- B. **Regulatory Requirements:**
 - 1. ASME A17.1/CSA B44, "Safety Code for Elevators and Escalators." Latest Adopted version of Prevailing Code Authority; or no later than the 1996 version with all supplements.
 - 2. NFPA 70 National Electrical Code.
 - 3. Local codes and requirements of authorities having jurisdiction.
- C. **Seismic Requirements (As Required):**
 - 1. Seismic Risk Zone: Project is located in Zone [0 or 1] [2] [3 or greater].
 - 2. BOCA/SBC Seismic Performance Category ["B"], ["C"] and ["D"].
 - 3. IBC Seismic Design Category ["C"], ["D"], ["E"] and ["F"].
 - 4. Elevator System to withstand effects of earthquake motions determined according to ASCE/SEI 7.
 - 5. Comply with elevator safety requirements for seismic risk Zone 2 or greater in ASME A17.1/CSA B44.
 - 6. Provide Earthquake equipment required by ASME A17.1/CSA B44.
- D. **Inspection and Testing:** Elevator Contractor (VT Contractor) to obtain and pay for all required inspections, tests, permits and fees for elevator installation.
- E. **Flood Plain Requirements (As Required):** Elevator Installer to identify and comply with additional requirements when the project site is located in an established flood plain.

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1.8 PRE-INSTALLATION MEETING (PRE-CONSTRUCTION PHASE)

- A. **Pre-installation Meeting:** Conduct a Pre-installation Meeting at Project Site to review Vertical Transportation delivery and installation procedures.

1. **Meeting Attendance:** Require attendance in meeting of GC, Target On-Site Representative (Target OSR), VT Consultant (via telephone or in person depending on the project), VT Contractor's Superintendent, Mechanical and Electrical contractors and other party's directly affecting work of this Section.
2. **Schedule:** Coordinate Date and Time for Pre-installation Meeting with Target PM and GC.
3. **Pre-installation Meeting Agenda:** Review the following.
 - a. VT Consultants role in vertical transportation submittal review for Target brand compliance, inspection and punch list preparation.
 - b. Project drawings and specifications for application of vertical transportation systems.
 - c. Project Shop Drawing submittal requirements, completeness of submittals, approvals, and routing.
 - d. Coordination of submittals with work of other trades to assure necessary building infrastructure is available and properly prepared for vertical transportation installation.
 - e. Applicable local code requirements for vertical transportation systems that were researched by the General Contractor.
 - f. Production requirements for timely, operational completion of vertical transportation systems for use in store fixture delivery, including size of crew, number of qualified mechanics and capabilities to respond to requirements of construction schedule.
 - g. Proposed installation procedures with vertical transportation installer and other affected trades.
 - h. Delivery of vertical transportation components, access to installation locations and specific Project conditions.
 - i. Required inspections and quality expectations for vertical transportation components.
 - j. Forecasted weather conditions during delivery and installation periods and measures to be taken in the event of adverse conditions.
 - k. Discuss vertical transportation pre-inspection preparation, turnover inspection, and Authority having Jurisdiction- (AHJ) inspection.
 - l. Review punch list preparation at turnover, and final inspection Review final inspections, testing and turnover of vertical transportation units and the associated coordination and interface with alarm and monitoring systems, emergency communication and final integration into Alert One System.
 - m. Other issues that require discussion and coordination for timely completion of vertical transportation installation.
4. **Pre-installation Meeting Minutes:** GC to record in writing, minutes of meeting which will include items discussed decisions or agreements made, and identification of unresolved issues. GC will distribute meeting minutes within 5 working days of meeting date to all attending parties.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, and handle materials, components, and equipment in manufacturer's protective packaging.
- B. Store materials, components, and equipment off of ground, under cover, and in a dry location. Handle according to manufacturer's written recommendations to prevent damage, deterioration, or soiling.
- C. The GC may require the material to be moved at least once so coordination is important to minimize relocation.

1.10 PROJECT SCHEDULE

- A. **Equipment Completion:** Complete installation of elevator equipment, including inspection, testing to follow schedule agreed upon at the Pre-Installation Meeting. And Owner instruction at dates prior to Turnover as follows:
 1. **Escalators:** to follow the schedule agreed upon at the Pre-Installation Meeting.
- B. **Notification of Completion:** VT Contractor to provide written notification to GC of installation completion, as specified above, to allow for any Target required inspection outlined during the Pre-Installation Meeting

1.11 WARRANTY

- A. **Special Manufacturer's Warranty:** Written warranty, signed by installer agreeing to repair, restore, or replace defective equipment including labor within specified warranty period.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers and Products for Escalators:

1. Schindler Elevator Co.: Schindler Model 9300 (2 flat step top and bottom).
2. Comparable products from the following manufacturers.
 - a. Fujitec America.
 - b. KONE Elevator Corporation.
 - c. ThyssenKrupp Elevator Company.
 - d. Mitsubishi Electric Elevator/Escalator Division.
 - e. Anlev
 - 1) Approved under the following requirements (no substitutions allowed):
 - (a) Anlev Model A2S only
 - (b) Installer must provide Schindler steps/rollers/demarcation strips
 - (c) Installer must provide EHC Global rubber handrails
 - (d) Installer must provide Motion Control Engineering escalator controller
 - (e) Installer must provide step chain from Precision Escalator, Inc.
3. **Independent VT Installation Vendors** may be considered in addition to the specified VT vendors, but are required to be pre-approved by Target Project Construction Manager and Target's Vertical Transport Consultant.

2.2 MATERIALS

- A. Stainless Steel:** ASTM A 666, Type 304, with No. 4 satin finish.
- B. Clear Tempered Glass:** ASTM C 1048, Condition A (uncoated surfaces), Type 1 (transparent glass, flat), Class 1 (clear), Quality q3 (glazing, select), Kind FT (fully tempered).

2.3 IN-FILL GROUT POCKET

- A.** Fill the in-fill grout pocket with Epoxy non-shrink resin grout. Provide High flow, high strength, epoxy non-shrink resin grout as follows:
1. Manufacturer and Product:
 - a. Manufacturer: L & M Construction Chemicals, Inc.; Product: EpogROUT 758.
 - b. Manufacturer: Sika; Product: Sikadur 42 Grout.
- B.** Provide Shop Drawings of this in-fill grout pocket along with the Escalator Shop Drawings.

2.4 COMPONENTS

- A. General (Indoor Escalators):** Provide manufacturer's standard heavy-duty escalators complying with requirements. If not otherwise indicated, provide standard components as indicated in manufacturers' publications and as required for a complete escalator.
- B. General (Outdoor Escalators):** Provide manufacturer's heavy-duty escalators complying with requirements of outdoor environments. This includes as a minimum: epoxy painted truss, all truss-related components to be hot dipped galvanized, truss heaters at each basket, watertight electrical fittings and watertight switches. Controller to have weather sealed door. If not otherwise indicated, provide heavy duty components as indicated in manufacturers' publications and as required for a complete escalator.
- C. Transparent Balustrades:** Manufacturer's standard profile or arrangement of moving handrails on guide rail that is supported by clear tempered Z97 rated glass panels, with deck covers, skirts, trim, and accessories. Prepare for exterior finish below the deck covers, specified in another Section.
- D. Guards at Ceiling Intersection:** Clear plastic.
- E. Handrails:** Smooth, joint less, reinforced neoprene.
1. Color: Black.
- F. Deck Covers and Trim:** Satin stainless steel.
- G. Anti-slide Devices:** Satin stainless steel.

- H. **"A" Shaped Barriers:** 12 gauge, stainless steel barriers fabricated in size and profile as indicated on Drawings. Furnish stainless steel fasteners for installation.
- I. **Skirt Panels:** Stainless steel panels or steel panels with exposed surface coated or impregnated with tetrafluoroethylene.
 - 1. Clearance between skirt panels and steps shall not exceed 1.5875 mm (1/16 inch).
 - 2. Comply with "loaded gap measurement" test per ASME 17.1 / CSA B44 Code.
 - 3. Install new skirt brushes per prevailing code requirement, with integrated LED lighting.
- J. **Steps:** One-piece, die-cast aluminum units.
 - 1. Provide escalators with two flat steps at top and bottom landings.
 - 2. Provide treads with matte black painted grooves with top of tread surface natural aluminum finish. Riser surfaces matte black painted finish.
 - 3. Provide OSHA yellow demarcation grooves on perimeter at sides and rear of tread.
- K. **Combs:** Integrally colored structural plastic.
 - 1. Comb Color: OSHA Yellow.
- L. **Floor Plates:** Stainless steel with grooved or patterned surface and black painted infill.
 - 1. **Cart Conveyor Floor Plates:** When cart conveyor(s) are adjacent to escalator, Escalator Contractor / Manufacture shall provide floor landing plates for cart conveyor(s) to match those provided for escalators at upper and lower landings. No logo to appear on cart conveyor deck plate. Cart Conveyor deck plates edges to align with escalator deck per Drawings. Escalator Contractor to coordinate deck plate configuration with Cart Conveyor manufacture as specified under Section 14 5013 - Cart Conveyors. .
- M. **Operational Control:** Provide escalators designed and equipped to run equally in either direction. Provide key-operated switches for directional control and key-operated starter switches located on exterior deck above newel base at both upper and lower landings of escalators.

2.5 SAFETY FEATURES

- A. Provide safety devices required by ANSI A17.1 and other regulatory agencies.
- B. **Motor:** Provide motors complying with NEMA MG 1, Insulation Class B.
- C. **Fault Indicator:** Provide escalators with a microprocessor unit that monitors safety devices, motor temperature, and escalator speed and records in nonvolatile memory date, time, and device identification if a safety device is activated or escalator malfunctions. Provide built-in unit to display recorded information.
- D. **Lubricators:** Equip step drive mechanism with automatic step-chain lubricators, including lubricators for drive chains, step chains, and handrail drive chains.
- E. **Oil Drip Pan:** Provide metal pan under full width and length of escalator to collect and hold oil and grease drippings from lubricated components. Design and fabricate drip pan to sustain a load of 113 kgf (250 lbf) on a sq. ft. area at any location without permanent deflection.
- F. **Combplate Lights:** Provide recessed LED light fixtures with flush lenses mounted in skirt panels at each side of combplates designed to illuminate steps at combplate.
- G. **Overspeed Governor:** Provide units with overspeed governor that is activated if speed of steps exceeds rated speed by more than 20 percent.
- H. **Comb-Step Impact Device:** Activated if a horizontal force in direction of travel is applied exceeding 50.8 kgf (112 lbf) at either side or exceeding 102 kgf (225 lbf) at center of front edge of combplate, or a resultant force in upward direction is applied exceeding 68 kgf (150 lbf) at center of front edge of combplate.
- I. **Handrail Entry Guards:** Provide guards to prevent hands or foreign objects from being carried into the handrail entrance of the newel.
- J. **Handrail Entry Stop Switch:** Provide switch to stop the escalator if a hand or foreign object enters the handrail entrance of the newel. Provide at top and bottom for each handrail.
- K. **Stopped Handrail Stop Device:** Device shall be provided to remove power and stop escalator should handrail break, or stop moving, or stretch beyond a preset amount.

- L. **Step Sag Device:** Provide device to stop the escalator if the gap between the step and combplates becomes too great.
- M. **Step Chain Tension Device:** The escalators shall be provided with a device at the lower landing to maintain tension in the step chains. Safety switches shall be provided which will interrupt power to the motor if the tension should vary between pre-determined limits or should either step chain break.
- N. **Missing Step Device:** Provide a device to stop the escalator before a missing step emerges from the combplate or is exposed.
- O. **Broken Drive Chain Device:** An emergency brake, mounted on the main drive shaft, shall be provided so that, should the main drive chain part, the brake will operate and stop and hold the escalator and its load.
- P. **Skirt Obstruction Device:** Means shall be provided to cause the opening of the power circuit to the escalator driving machine motor and brake should an object become wedged between the stop and the skirt panel as the step approaches the upper or lower combplates.
- Q. **Non-Reversing Device:** The controller shall include a device designed to stop the escalator should the direction of travel be accidentally reversed while the escalator is operating in the ascending direction.
- R. **Demarcation Lights:** Provide green demarcation lighting at each end of the incline. Replacement lamps shall be LED (preferred) or fluorescent, verify demarcation lamp type with AHJ.

2.6 SIGNS

- A. Provide "HOLD HANDRAIL" signs, emergency stop button cover signs, and warning signs, per Code.
- B. Provide "CAUTION - NO WHEELED VEHICLES ALLOWED" sign, same lettering and size as hold handrail signs.
- C. Signage to be approved by Architect prior to installation.
- D. Provide "NO CARTS" signage on the upper newel escalator glass balustrade. Signage by Target ISM

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine escalator areas, with Installer present, for compliance with requirements, installation tolerances, and other conditions affecting performance. Examine supporting structure, machine spaces, and pits; verify critical dimensions; and examine conditions under which escalators are to be installed.
- B. Adverse conditions or modifications should be identified and conflicts itemized per respective Code rule.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written instructions.
- B. Provide, supervise and coordinate escalator units as indicated on Drawings and as specified. Escalator Contractor is also responsible for the following:
 - 1. Furnish and install electrical controls and wiring for complete installation.
 - 2. Coordination with installation of Cart Conveyor units specified under Section 14 5013. Including installation of landing plates and closure panels at cart conveyors.
- C. Set escalators true to line and level, properly supported, and anchored to building structure. Use established benchmarks, lines, and levels to ensure dimensional coordination of the Work.
- D. Adjust installed components for smooth, efficient operation, complying with required tolerances and free of hazardous conditions.
 - 1. Lubricate operating parts, including bearings, tracks, chains, guides, and hardware.
 - 2. Test operating devices, equipment, signals, controls, and safety devices.
 - 3. Install oil drip pans and verify that no oil drips outside of pans.

- E. Clean installed, existing items of oil, grease, scale, and other foreign matter including construction debris.
- F. Repair damaged finishes so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop, make required repairs and refinish entire unit, or provide new units as required.

3.3 IN-FILL GROUT POCKET

- A. This work must be done to follow Approved Shop Drawings.
- B. General: After the Escalator(s) are placed, as work proceeds place a 50.8 mm (2" x _) blocking member at the edge of structural slab to provide the necessary void for the in-fill grout pocket, see Drawing sheet A893.
- C. After structural slab is placed remove the 50.8 mm (2" x _) blocking member to create the in-fill void.
- D. Position the steel support plate over the support angle and plug weld as indicated on Drawing sheet A893.
- E. Grind (with 20-40 grit aluminum oxide disc) or blast the exposed steel plate to provide a suitable surface for epoxy grout to adhere.
- F. Concrete at in-fill grout location must be 28 days old minimum. Roughen surface of exposed concrete and remove any surface laitance.
- G. Clean all loose dust and debris from in-fill grout pocket by vacuuming.
- H. Determine the extent of the in-fill grout pocket and make the form area liquid-tight. Protect all surfaces and finishes adjoining the in-fill grout pocket by plastic sheeting or provide a double coat of forms being removed with paste wax. Provide form voids of 9.525 mm (3/8") at stainless steel and other designated positions to allow for backer rod and sealant as shown on Drawing Sheets.
- I. Stir each liquid component separately before blending. Pour all of Part A into mechanical mixer and then add B while mixing slowly and well.
 - 1. After Part A and Part B are thoroughly mixed (before aggregate is added), with a new paint brush apply a coat of the mixed resin to the entire exposed surface of the steel plate (this should be a very small portion of the mixed resin). Immediately proceed with mixing the remaining grout ingredients.
- J. With the remaining mixed resin slowly add aggregate with continued mixing until all aggregate is uniformly coated and proper consistency is achieved.
- K. Fill the in-place grout pocket with epoxy grout to elevation indicated to provide a flush and level transition from structural slab to the edge of the escalator construction and acts a base for VCT flooring.

3.4 FIELD QUALITY CONTROL

- A. **Acceptance Testing:** On completion of escalator installation and before permitting use of escalators, perform acceptance tests as required and recommended by ASME A17.1 CSA B44 and by authorities having jurisdiction.
 - 1. For escalators specified to comply with requirements more stringent than those of ASME A17.1 CSA B44, perform tests for compliance with specified requirements. Test optional safety devices.
 - 2. If installed under the ASME 17.1 CSA B44 requirements, provide the test results of the loaded gap measurement test to the OSR for review.
 - 3. Install data tag for brake torque testing on an annual basis.
 - 4. Advise OSR and Authorities having Jurisdiction in advance of dates and times tests are to be performed on escalators.
 - 5. A copy of acceptance testing documents shall be provided and left in the top of machine space or in the file holder per unit.
 - 6. The project will be subject to Target's VT commissioning process and equipment will be inspected by a Target Representative, an Elevator Consultant or both. Any deficiency list will be required to be addressed and completed within 14 days of receipt unless an alternate timeline is approved by Target

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3.5 DEMONSTRATION

- A. Installation vendor is to instruct Owner's maintenance personnel in proper use, operation, and daily maintenance of escalators.
 - 1. Review emergency provisions, including procedures to be followed at time of operational failure and other building emergencies.

2. Train Owner's maintenance personnel in procedures to follow in identifying sources of operational failures or malfunctions.
 3. Coordinate with Owner's maintenance personnel for a complete escalator maintenance program.
 4. Conduct training seminar with written material at the jobsite with OSR and selected Target Store Team members.
- B. Make final check of each escalator operation with Owner's personnel present and before date of Store Turnover. Determine that operation systems and devices are functioning properly.

3.6 PROTECTION

- A. **Equipment Protection:** Do not use escalators for construction purposes. Provide protective coverings, temporary construction partitions, enclosures, guardrails, barriers and signage as necessary to protect escalators. Protect all stainless steel decking, glass surfaces and floor deck plates with plastic film clinging wrap. If, despite such protection, escalators become damaged, engage escalator installer to restore or replace damaged work so that no evidence remains of corrective work. Remove and return items that cannot be refinished or repaired to Escalator Manufacturer.
- B. **Site Safety:** Provide barricades at site to assure an unsafe condition can be secured against pedestrian traffic when escalators are being relocated, installed and being restored to operation. Where necessary provide temporary construction partitions, enclosures, guardrails, barriers and safety signage to protect pedestrian traffic.

3.7 ESCALATOR SCHEDULE

A. **Escalators No. 1 and 2:**

1. **Quantity:** X.
2. **Rise:** XX meters (X'-X"). See Drawings.
3. **Rise:**
 - a. 1-2: XX meters (XX'-0"). See Drawings.
 - b. 2-3: XX meters (XX'-0"). See Drawings.
4. **Floors Served:** X to X. See Drawings.
5. **Size:** 1016 mm (40" wide) tread.
6. **Type:** Two flat steps, top and bottom.
7. **Speed:** 0.457 to 0.509 mps (90 fpm. - 100fpm).
8. **Angle of Inclination:** 30 degrees.
9. **Arrangement:** As indicated on drawings.
10. **Operation:** Reversible, travel up/down.
11. **Balustrades:** Clear, tempered glass.
12. **Floor Plates:** Stainless steel with black infill.
13. **Deck Boards:** Satin stainless steel.
14. **Molding and Trim:** Satin stainless steel.
15. **Skirt Panels:** Teflon impregnated steel or stainless steel with friction reducing material to prevent binding.
16. **Handrail Color:** Black.
17. **Step Riser:** Cleated, die-cast aluminum.
18. **Tread:** Cleated, die-cast aluminum.
19. **Power Supply:** 480 volts - 3 phase - 60 hertz.
20. **Safety Devices:** per ASME A17.1 CSA B44, provide all required devices.
 - a. Overspeed device.
 - b. Handrail entry guards.
 - c. Handrail entry stop switches.
 - d. Stopped handrail device.
 - e. Combplate sensor.
 - f. Step sag device.
 - g. Step chain tension device.
 - h. Missing step device.
 - i. Broken drive chain device.
 - j. Skirt obstruction device.
 - k. Stop switch with cover and buzzer.
 - l. Emergency stop button.

- m. Key direction start switch.
- n. Hold handrail and instruction sign per ANSI code; sign to be engraved or sand/bead blasted, fastened with tamper-resistant screws (no stick-on or riveted plates).
- o. Stainless steel anti-slide knobs and intersection barriers; barriers to match adjacent guard rails.
- p. Watertight switches and electrical fittings.

21. Additional Equipment and Options:

- a. Demarcation lighting - top and bottom.
- b. Matte black painted grooves and risers on steps with OSHA yellow perimeter sides and rear.
- c. OSHA Yellow combplates.
- d. No visible company name or logo.
- e. Tie in angle for cart conveyors.
- f. Assistance with cart conveyor installation.
- g. Epoxy painted trusses; all truss-related components to be hot dipped galvanized.
- h. Truss heaters.
- i. Fastening elements for customer-provided cladding.
 - 1) Brackets for attaching cladding or drywall are to be included to prevent other trades from drilling into truss. Lateral brackets and soffit brackets are both to be included. Sheetrock to be provided and installed by others.

END OF SECTION

SECTION 14 5013 CART CONVEYORS

PART 1 - GENERAL

1.1 SUMMARY

A. **Section Includes:**

1. Installation of Owner Furnished Cart Conveyors.
2. In-Store Cart Conveyor(s): indicated on Drawings as (CC-I) through (CC-X).
3. Exterior Cart Conveyor(s): indicated on Drawings as (CC-Y) through (CC-Z)
4. Common Lobby or Parking Garage Cart Conveyors (s): indicated on Drawings as (CC-V) through (CC-W).

1.2 RELATED ITEMS

- A. Section 03 3000 - Cast-in-Place Concrete; for setting sleeves, inserts, and anchoring devices in concrete.
- B. Section 05 1210 - Structural Steel Framing Fabrication; for attachment plates, angle brackets, and other preparation of structural steel to support cart conveyor trusses.
- C. Section 09 2116 - Gypsum Board; for enclosures of and finishes applied to exterior of cart conveyors.
- D. Section 14 2413 - Hydraulic Freight Elevators
- E. Section 14 2423 - Hydraulic Passenger Elevators
- F. Section 14 3100 – Escalators
- G. Division 26 Sections for electrical service to cart conveyors, including disconnect switches, pit lighting and receptacles.

1.3 DEFINITIONS

- A. **Defective Cart Conveyor Work:** Operation or control system failures; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; the need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.

1.4 REFERENCES

- A. American Society for Testing of Materials, (ASTM):
 1. ASTM A 366, "Specification for Steel Sheet, Carbon, Cold-rolled, Commercial Quality".
 2. ASTM A 569, "Specification for Commercial Steel (CS) Sheet and Strip, Carbon (0.15 Maximum Percent), Hot Rolled".
 3. ASTM A 666, "Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar".
- B. American Society of Mechanical Engineers, (ASME):
 1. ASME A17.1/CSA B44, "Safety Code Elevators and Escalators."
 2. ASME B20.1, "Safety Standard for Conveyors and Related Equipment".
- C. National Electrical Code, (NEC).
- D. National Fire Protection Agency, (NFPA):
 1. NFPA 70, National Electrical Code.
- E. National Electrical Manufacturer's Association, (NEMA).

1.5 SUBMITTALS

- A. Product Data: Include capacities, sizes, performance, operation, safety features, finishes, and similar information.
1. Conveyors and pits.
 2. Operation, control, and signal systems.

- B. **Shop Drawings:** Show plans, elevations, sections, and large scale details indicating service at each landing, coordination with building structure, any adjacent escalators and relationships with other construction. Indicate variations from specified requirements, maximum loads imposed on building structure at points of support, and maximum and average power requirements. Indicate access and ventilation for cart conveyor machine space and wellways.
1. Submit one (1) copy of each drawing submittal to Escalator Supplier for coordination.
 2. Provide electrical, structural, and mechanical data including BTU output.
 3. Any discrepancy with the sizes or dimensions of cart conveyors or associated appurtenances must be identified and noted on Shop Drawings and resolved before proceeding.
 4. **Shop Drawings Submittal Process:** Submit shop drawings for all Vertical Transportation components for Project together in one package including all elevators and controls, escalators, cart conveyors and material handling units as applicable.
 - a. Manufacturer:
 - 1) Manufacturer shall provide Vertical Transportation Shop Drawings. They shall meet Code and project specific requirements from the Contract Documents. Drawings not prepared and signed by manufacturer will be returned as unacceptable.
 - (a) Manufacturer shall assign a Project Number or Name referencing this specific project. Indicate Number or Name on Shop Drawings. All drawings or each submittal must use the Elevator complex number, location and job number.
 - (b) Copies: Submit electronic copies as a PDF. Manufacturer shall send Shop Drawings to Project General Contractor (GC) for review and approval.
 - b. General Contractor:
 - 1) General Contractor shall review, stamp and sign Shop Drawings for all Vertical Transportation components.
 - 2) General Contractor shall retain an electronic copy and submit (1) electronic signed copy through the submittal process to the Architect, Target Project Manager (Target PM) and Owner's Vertical Transportation Consultant (VT Consultant) for review and approval. Identify Project name and number on transmittal.
 - c. Target's Vertical Transportation Consultant (VT Consultant):
 - 1) HKA Elevator Consulting, 23211 South Pointe Drive, Laguna Hills, CA, Phone 949-348-9711.
 - 2) VT Consultant shall review, stamp and sign Shop Drawings for all Vertical Transportation components.
 - 3) VT Consultant shall scan the signed printed copy for their files and submit the stamped signed electronic copy to the Project's Architect of Record for review and approval. Identify Project name and elevator number and location on transmittal.
 - d. Architect of Record:
 - 1) Architect of Record shall review, stamp and sign Shop Drawings for all Vertical Transportation components.
 - 2) Architect will distribute a copy of their reviewed Shop Drawings to the project engineers (Structural, Mechanical, and Electrical), for review. Architect will receive the engineer reviewed copies and will compile all review comments to the Architectural reviewed Shop Drawings (this document then becomes the "original signed printed copy").
 - 3) Architect of Record to photo copy the compiled signed printed copy for Architect's file and forward the original signed printed copy to General Contractor.
 - e. General Contractor:
 - 1) General Contractor shall scan or present the signed copy for their files and submit the original signed printed copy or electronic version, with corrections noted from GC, VT Consultant, Architect, and Engineers to Manufacturer for corrective action as necessary. Refer to Section 01 3300 – Submittal Procedures for definitions of corrective actions.
 - 2) Resubmit corrected Shop Drawings to Architect of Record and VT Consultant as applicable
 - 3) If no corrective action was required, notify Manufacturer of approval for fabrication.
 - f. In-Fill Grout Pocket Shop Drawings:
 - 1) Provide Shop Drawings of the in-fill grout pocket details as shown on Drawings sheet A893, these Shop Drawings are to be submitted and approved along with the Cart Conveyor Shop Drawings.
- C. **Maintenance Manuals:** Provide written information necessary for proper maintenance and adjustment of the equipment prior to final acceptance.

1. Straight-line wiring diagram of as-installed elevator circuits with index of location and function of components. Provide three neatly bound final corrected sets within 30 days after job acceptance for the Owner's file. One copy to be left in the machine room displayed in a plastic holder, neatly bound.
 - a. Provide additional copy in electronic format to Target PM who will provide copies to Target Property Development, Vertical Transportation Lead Program Manager.
2. Lubricating instructions, including recommended grade of lubricants. Provide three bound copies.
3. Parts catalogs for replaceable parts including ordering forms and instructions. Provide three bound copies.
4. Three sets of instruction manuals and equipment catalogs.
5. MSDS sheets for the hydraulic oil and solvents inserted into a plastic insert mounted on the tank unit for quick reference.
6. One set of approved shop drawings shall be placed in the elevator machine room.
7. One complete construction manual of all drawings, literature of all equipment shall be provided and left in the machine room.
8. Operation manuals to include description, and operation instructions of the following:
 - a. Quick reference guides, in laminated plastic,
 - b. General operation of the system, including version number and release date of controller software, shall be posted on the exterior of the controller door.
 - c. Conveyor gate repair and adjustment procedure.
 - d. Complete schematics for each conveyor unit. Place one additional hard copy inside controller door in a pocket, properly identified with store T number, project number, and unit serial number.
 - e. Sleep, automatic and manual modes,
 - f. Turning the system on and off,
 - g. System reset,
 - h. Secure modes,
 - i. Placing shopping carts onto conveyor,
 - j. Removing children from carts,
 - k. Merchandize in shopping cart and under carriage clearance,
 - l. Shopping cart tow bar; T-shaped tow bar for Cartveyor system by PFlow,
 - m. Removing shopping carts from conveyor,
 - n. Shopping cart retrieval,
 - o. Shopping cart spill recovery procedure,
 - p. Jogging stuck shopping carts in the conveyor,
 - q. Common fault and reset procedures, each fault shall be identified as to what the fault is, the purpose of the fault sensor, and an explanatory note of the chief ways it may have been triggered.
 - r. Sensors types and sensor part numbers identified for ordering replacements.
 - s. Emergency stop operation,
 - t. Safety gates and access sensors, including part number identified for ordering replacement
 - u. Safety overview, and
 - v. Emergency protocol.
9. Maintenance Manuals to include description of non-corrective maintenance advice, appropriate to building owner, of the following:
 - a. Quick reference guides, in laminated plastic.
 - b. Complete operation.
 - c. Basic trouble shooting.
 - d. Common fault and reset procedures, each fault shall be identified as to what the fault is, the purpose of the fault sensor, and an explanatory note of the chief ways it may have been triggered.
 - e. Provide a fault matrix form for record keeping of fault types and quantities in the maintenance manual. Include the requirement of documentation of fault logs in monthly or quarterly maintenance procedures.
 - f. Sensors types and sensor part numbers identified for ordering replacements.
 - g. General housekeeping and cleaning,
 - h. Visual inspection equipment checklist.
 - i. Complete cleaning including type of cleaning solvents and how to clean conveyor wellway.
 - j. MSDS sheets for all lubricants, cleaners and other materials.
 - k. Service call procedures.
 - l. Emergency protocol.
 - m. General non-corrective maintenance of the system, with items identified to be performed only by authorized service technician, of the following:

- 1) Manufacturers complete data sheets,
 - 2) Recommended cleaning materials,
 - 3) Complete lubrication data and schedules,
 - 4) Maintenance, repair, and adjustment data including manufacturer's instructions,
 - 5) Parts catalog, exploded parts view diagrams, and parts list with part numbers, recommended parts to stock, and nearest parts depot and service organization, and
 - 6) Diagrams and drawings illustrating assembly, wiring, and mechanical systems.
- D. **Permits, Inspection and Testing:** Installer to provide Owner with inspection and acceptance certificates and operating permits as required by authorities having jurisdiction for normal, unrestricted use of cart conveyors; no later than three (3) weeks prior to store turnover.
- E. **Keys:** Ten (10) sets of each key for each key switch and keyed device. Including but not limited to the service panel, starting keys, reset keys and controllers keys and access panel door keys. All keys shall be properly tagged. Provide plastic tags or brass key tags, PAPER TAGS ARE NOT ALLOWED. As an alternative to keying, provide a numeric password protected electronic means to activate the cart conveyor.

1.6 QUALITY ASSURANCE

- A. **Installer Qualifications:** Escalator manufacturer or a qualified installer approved by cart conveyor manufacturer who has completed installations similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. **Regulatory Requirements:**
1. ASME B20.1, "Safety Standard for Conveyors and Related Equipment".
 2. NFPA 70.
 3. National Electrical Code.
 4. Local codes and requirements of authorities having jurisdiction.
- C. **Seismic Requirements:**
1. Seismic Risk Zone: Project is located in Zone [2] [3 or greater].
 2. BOCA/SBC Seismic Performance Category ["B"], ["C"] and ["D"].
 3. IBC Seismic Design Category ["C"], ["D"], ["E"] and ["F"].
 4. Elevator System to withstand effects of earthquake motions determined according to ASCE/SEI 7.
 5. Comply with elevator safety requirements for seismic risk Zone 2 or greater in ASME A17.1/CSA B44.
 6. Provide Earthquake equipment required by ASME A17.1/CSA B44.

1.7 PRE-INSTALLATION MEETING (PRE-CONSTRUCTION PHASE)

- A. **Pre-installation Meeting:** Conduct a Pre-installation Meeting at Project Site to review Vertical Transportation delivery and installation procedures.
1. Meeting Attendance: Require attendance in meeting of GC, Target On-Site Representative (Target OSR), VT Consultant (via telephone or in person depending on the project), VT Contractor's Superintendent, Mechanical and Electrical contractors and other party's directly affecting work of this Section.
 2. **Cart Conveyor manufacturer contact:**
 - 1) For Cart Conveyors being supplied by PFlow Industries, 414-352-9000
 3. **Schedule:** Coordinate Date and Time for Pre-installation Meeting with Target Construction Project Manager.
 4. **Pre-installation Meeting Agenda:** Review the following.
 - a. Target Vertical Transport Consultants role in vertical transport submittal review for Target brand compliance, inspection and punch list preparation.
 - b. Project drawings and specifications for application of vertical transport systems.
 - c. Project Shop Drawing submittal requirements, completeness of submittals, approvals, and routing.
 - d. Coordination of submittals with work of other trades to assure necessary building infrastructure is available and properly prepared for vertical transport installation.
 - e. Applicable local code requirements for vertical transport systems that were researched by the General Contractor, Architect and Vertical Transport Consultant.
 - f. Production requirements for timely, operational completion of vertical transport systems for use in store fixture delivery, including size of crew, number of qualified mechanics and capabilities to respond to requirements of construction schedule.
 - g. Proposed installation procedures with vertical transport installer and other affected trades.

- h. Delivery of vertical transport components, access to installation locations and specific Project conditions.
 - i. Required inspections and quality expectations for vertical transport components.
 - j. Forecasted weather conditions during delivery and installation periods and measures to be taken in the event of adverse conditions.
 - k. Discuss vertical transport pre-inspection preparation, turnover inspection, and Authority having Jurisdiction – (AHJ) inspection.
 - l. Review punch-list preparation at turnover, final inspection and follow-up warranty inspection by Target's Vertical Transport Consultant. Establish turnover target date.
 - m. Provisions by OSR to assure a minimum of ten (10) shopping carts of each type to be utilized at the store are on site prior to punch list preparation in order to test the cart conveyor system.
 - 1) Shopping cart must arrive at store between 8 and 10 weeks prior to Turnover, or as coordinated by General Contractor per project schedule.
 - 2) After conveyor testing, shopping carts are to be safely stored in like new condition and released by OSR to Store Team at Store Turnover.
 - n. Discuss turnover and post turnover Owner training sessions requirements, including training and maintenance manuals.
 - o. Other issues that require discussion and coordination for timely completion of vertical transport installation.
 - p. General Contractor and construction subcontractors must not use cart conveyors or shopping carts for any other reason except at time of cart conveyor system adjustment and testing, following prescribed procedures.
5. **Pre-installation Meeting Minutes:** General Contractor to record in writing, minutes of meeting which will include items discussed, decisions or agreements made, and identification of unresolved issues. Contractor will distribute meeting minutes within 5 working days of meeting date to all attending parties.

1.8 COORDINATION

- A. Coordinate installation of surrounding structural components for shopping cart conveyor equipment. Furnish templates and installation instructions and deliver to Project site in time for installation.
- B. Coordinate locations and dimensions of other work relating to cart conveyor including any embedded steel and electrical service.
- C. Lateral bracing of cart conveyor shall be to building structure floor deck(s) and shall be designed and provided by the manufacturer.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. General Contractor to confirm required delivery, installation and Turnover dates in written form to Cart Conveyor manufacture a minimum of ten (10) weeks in advance of Turnover date.
- B. Deliver, store, and handle cart conveyor materials, components and equipment in manufacturer's protective packaging.
- C. Store materials, components, and equipment off of ground, under cover, and in a dry location. Handle according to manufacturer's written recommendations to prevent damage, deterioration, or soiling.
- D. Protect and handle materials in accordance with manufacturer's recommendations to prevent damage, soiling, or deterioration.

1.10 PROJECT SCHEDULE

- A. **Equipment Completion:** Complete installation of cart conveyor equipment, including inspection, testing and Owner instruction at dates prior to Turnover as follows:
 - 1. **Cart Conveyors:** to follow the schedule agreed upon at the Pre-Installation Meeting.
- B. **Notification of Completion:** Vertical Transport contractor to provide written notification to General Contractor and Owner's Site Representative of installation completion, as specified above, to schedule Owner's Vertical Transport Consultant, installation inspection.

1.11 WARRANTY

- A. **Manufacturer's Warranty (12 Month):** Written warranty, signed by installer agreeing to repair, restore, or replace defective equipment including labor within specified warranty period.
1. **Warranty Period:** 12 months from the official acceptance date of the Authority Having Jurisdiction (AHJ) – [local elevator inspector and/or vertical transport inspector] releases the equipment for sanctioned use. The Installer is responsible for completion of any deficiency list or conflicts with the specifications within 30 days of receipt and identification.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. **Acceptable Manufacturers for Cart Conveyors:**

1. PFlow Industries:
Product: Cartveyor – Dual Track model DCV
6720 N. Teutonia Avenue
Milwaukee, WI 53209

B. **Acceptable Installers for Cart Conveyors:**

1. Mitsubishi Electric Elevator/Escalator Division.
2. Schindler Elevator Corporation.
3. ThyssenKrupp Elevator Company.
4. Independent VT Installation Vendors may be considered in addition to the specified VT vendors, but are required to be pre-approved by Target Project Construction Manager and Target's Vertical Transport Consultant.
 - a. Independent Material Handling Vendor [as allow by Authority having Jurisdiction (AHJ)] may be considered in lieu of VT vendor, but are required to be pre-approved by Target Project Construction Manager, Target's Vertical Transport Consultant, and Original Equipment Manufacturer (OEM) of existing cart conveyor units.

2.2 MATERIALS

- A. **Stainless Steel:** ASTM A 666, Type 304, with No. 4 satin finish.

2.3 PERFORMANCE REQUIREMENTS

- A. Cart Conveyors to be capable of operating at full speed with full-load in one direction, 16 to 20 hours a day, seven days a week.
- B. **Rated Speed:** 0.406 to 0.509 mps (80 to 100 fpm).
- C. **Sound Level:** Cart Conveyors to operate at or below 65 dbA measured 1524 mm (5 feet) above the conveyor at all locations with no load and full load. Measurement will be made with one cart conveyor at a time running. Measurement shall also be made during activation of runaway shopping cart device as cart goes through device.
- D. **Tool Access:** Provide integral tool.
- E. **Motor Drive Parameters:**
1. Three phase
 2. Continuous duty
 3. Fully operational in ambient temperature of 4.4 to 48.8 degrees Celsius (40 to 120 degrees Fahrenheit).
 4. The motor shall not automatically restart when overload device is reset.

2.4 MACHINE EQUIPMENT

- A. Manufacturer's Standard equipment for complete installation including but not limited to:
1. Drive Machine.

2. Brakes.
3. Motor.
4. Controller.
5. Driving Sprocket.
6. Control Devices,
7. Cart gates, gate hinges and interlocks.

2.5 COMPONENTS

- A. Cart Conveyor Truss:
 1. Cart conveyor manufacturer shall fabricate and deliver to site conveyor truss as single composite assembly. Provide a minimum of 4 crane attachment hoist points to sufficiently support setting conveyor into place.
- B. **General (Indoor Cart Conveyors):** Provide manufacturer's standard heavy-duty cart conveyors components complying with requirements. If not otherwise indicated, provide standard components as indicated in manufacturers' publications and as required for a complete cart conveyor.
- A. **General (Outdoor Cart Conveyors):** Provide manufacturer's heavy-duty cart conveyor components complying with requirements of outdoor environments. This includes as a minimum: epoxy painted truss, all truss-related components to be either hot dipped galvanized or epoxy painted, truss heater at under deck basket at controller location, watertight electrical fittings and watertight switches. Controller to have weather sealed gasketed enclosure and access door. If not otherwise indicated, provide heavy duty components as indicated in manufacturers' publications and as required for a fully operational cart conveyor. Monitor panel access door fitted with weather tight gasket. A watertight fault screen shall be provided and located where water running down the incline or balustrades will not enter the assembly. Provide drain holes at all controller and monitor enclosures. All bolts, fasteners and devices to be stainless steel. All bolts exposed to the elements shall be stainless steel, including but not limited to cart gates, guides or mounting hardware.

2.6 WELLWAY EQUIPMENT

- A. Manufacturer's Standard equipment for complete installation including but not limited to:
 1. Each shopping cart loading zone will include bi-parting, in-swinging gates.
 - a. Conveyor gates will automatically lock and return to closed position until appropriate cart is presented.
 2. Each shopping cart unload zone will included bi-parting, out-swinging gates.
 - a. Conveyor gates will automatically lock and return to closed position after appropriate cart is discharged.
 3. Truss: with extensions to match escalator dimensions.
 4. Drip Pans.
 5. Tracks.
 6. Electrical Wiring: to comply with National, State and Local Codes.
 7. Conveyor wellways must accommodate two types of shopping cart; 1.) Target all plastic shopping cart and 2.) Target two-tier shopping cart.

2.7 BALUSTRADE, SKIRT PANELS, AND DECKING

- A. Manufacturer's Standard equipment for complete installation including but not limited to:
 1. Balustrade: with No. 4 Stainless Steel finish.
 2. Deck Boards, Trim and Moldings: 16 gauge, No. 4 finish stainless steel.
- B. **Floor Plates:** Floor landing plates furnished under Section 14 3100 - Escalators. Stainless steel or aluminum with grooved or patterned surface and black painted infill, (same as those provided on escalators), for landing area of Cart Conveyors, both lower and upper floor landings. Conveyor manufacture to coordinate deck plate size, type and layout with Escalator Manufacturer. Confirm that Escalator manufacturer will supply and install deck plates for both escalators and cart conveyors. Transition from cart conveyor well way to landing deck to be smooth transition.
- C. Fastening screws to be counter-sunk so screw head is flush with surrounding metal. Material and finish to be same as surrounding material.
- D. Conveyor wellway to be stainless steel with interfacing panels throughout the incline set to allow normal thermal expansion without warping.

- E. Balustrade Protection: Provide acrylic barrier on balustrade to protect conveyor and shopping cart.
 - 1. Clear transparent, smooth faced acrylic barrier of 12.7 mm (1/2 inch) thick material. Barrier must extend 609.6 mm (24 inches) above stainless steel balustrade deck.
 - a. Acrylic by PFlow.
 - 2. Manufacturer's Option: Top shall be capped with a stainless steel trim cap to properly align the entire length of cart conveyor barriers.

2.8 SIGNAL AND CONTROL FIXTURES

- A. Manufacturer's Standard controls in upper and lower newels with flush-mounted faceplates matching deck finish. Each station to contain the following:
 - 1. Red "emergency stop" buttons: which when actuated shall disconnect power supply to motor, automatically set brake and bring cart conveyor to an immediate stop.
 - 2. Key Directional Start Switch: Switch to start and stop travel of cart conveyor. Key switch or access codes at top landing can be used to operate cart conveyor in reverse (maintenance) direction.
 - 3. Status Screen:
 - a. Screen display with text or graphics for user instruction and system diagnostics.
 - b. Program to archive shopping cart thru-put number of hours running, and fault occurrences.
 - c. Sleep timer prevents continuous running and minimizes energy use.
 - d. Caster guides.
 - e. Tray beneath discharge end to catch debris.
 - f. Version number and release date of controller software.
 - g. Controller to count accumulated starts, with reset to zero by service technician.
 - h. Controller and status screen housing shall be watertight for conveyors in outdoor locations.
 - 4. Shopping Cart Types:
 - a. Target all plastic shopping cart; released in 2009.
 - b. Two-tiered metal shopping cart; released in 2012.

2.9 CART GATE ASSEMBLY

A. Conveyor Balustrade and Wellway Enclosure:

- 1. Components:
 - a. Conveyor Finish:
 - 1) Components exposed to view: Stainless steel, ASTM A312, Grade TP 304.
 - 2) Components not exposed to view: Steel items to be factory primed.
 - b. Provide continuous anti-skid block to guide carts.
 - c. Provide non-skid tread pads for maintenance access.
 - d. Provide method or description on safe cleaning of inclined conveyor wellway.

B. Outbound Gate Panels:

- 1. 12.7 mm (1/2 inch) thick, high density, polyethylene in composite fabrication as follows:
- 2. 1.5875 mm (1/16 inch) thick, textured outer surfaces, (both back and front).
- 3. 9.525 mm (3/8 inch) thick, smooth inner surface.
- 4. Colors:
 - a. Outer Surfaces:
 - 1) "Custom Target Red", color to match Pantone PMS-186.
 - b. Inner surface: "White".
 - c. No entry symbol and "No Entry" text as indicated on Drawings.
- 5. Fabricate panels to size and shape as indicated on Drawings.
- 6. Radius panel edges.
- 7. Hinge edge of panels to be reinforced with a 14 gauge stainless steel cap channel as indicated.
- 8. Graphics: Routed graphic symbols and lettering as indicated on Drawings. Graphics and lettering routed 3.175 mm (1/8 inch) deep into panel through colored textured surface into white inner surface.

C. Inbound Gate Panels: as follows:

- 1. 12.7 mm (1/2 inch) thick, clear Lexan polycarbonate sheet.
- 2. Graphics adhered to gate panel:
 - a. Self-adhesive, cut vinyl text and pictograph, pre-masked, indicating text "Carts Only" and "No Children" and associated pictographs. Vinyl graphic is placed on first surface of gate panel.

- b. Applied text and pictograph color to be white. (No black borders or black color infill to be included in graphics.)
 - c. Provide dual-language text in as required by authority having jurisdiction.
- D. **Gate Assembly Design:** Gate design must insure that the gate panels open to allow a cart to enter the cart conveyor, and return to closed position after the cart clears the gate.
- E. **Acceptable Manufacturers and Products for Cart Gate Assembly:**
 - 1. Chase Industries, Inc., Cincinnati, Ohio; Tel: 800-543-4455; Model SRP-5000 Gate Panels.
 - 2. Original Equipment Manufacturer (OEM) of Cart Conveyor.

2.10 IN-FILL GROUT POCKET

- A. Fill the in-fill grout pocket with Epoxy non-shrink resin grout. Provide High flow, high strength, epoxy non-shrink resin grout as follows:
 - 1. Manufacturer and Product:
 - a. Manufacturer: L & M Construction Chemicals, Inc.; Product: EpogROUT 758.
 - b. Manufacturer: Sika; Product: Sikadur 42 Grout.
 - 2. Indicate in submittal that Cart Conveyor in-fill grout pocket to match Escalator in-fill grout pocket.
 - 3. Provide Shop Drawings of this in-fill grout pocket along with the Cart Conveyor Shop Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine cart conveyor/escalator areas, with Installer present, for compliance with requirements, installation tolerances, and other conditions affecting performance. Examine supporting structure, machine spaces, and pits; verify critical dimensions; and examine conditions under which cart conveyor/escalators are to be installed.
- B. Visually inspect wellway openings, pits and structural support points as constructed.
- C. Notify General Contractor in writing of any dimensional discrepancies or other conditions detrimental to the proper installation or performance of the Work.
- D. Arrange for temporary electrical power to be available for installation work and testing of cart conveyors.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 CART CONVEYOR INSTALLATION

- A. Comply with manufacturer's written instructions.
- B. Provide, supervise and coordinate cart conveyor units as indicated on Drawings and as specified by code. Escalator Contractor is also responsible for the following:
 - 1. Furnish and install electrical controls and wiring for complete installation.
- C. Set cart conveyors true to line and level, properly supported, and anchored to building structure. Use established benchmarks, lines, and levels to ensure dimensional coordination of Work.
 - 1. Coordinate installation with installation of escalator units.
- D. Adjust installed components for smooth, efficient operation, complying with required tolerances and free of hazardous conditions.
 - 1. Lubricate operating parts, including bearings, tracks, chains, guides, and hardware.
 - 2. Test operating devices, equipment, signals, controls, and safety devices.
 - 3. Install oil drip pans and verify that no oil drips outside of pans.
- E. Clean installed items of oil, grease, scale, and other foreign matter.
- F. Repair damaged finishes so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop, make required repairs and refinish entire unit, or provide new units as required.

3.3 IN-FILL GROUT POCKET

- A. This work must be done to follow Approved Shop Drawings.
- B. General: After the Cart Conveyor(s) are placed, as work proceeds place a 50.8 mm (2") x _ blocking member at the edge of structural slab to provide the necessary void for the in-fill grout pocket, see Drawing sheet A893.
- C. After structural slab is placed remove the 50.8 mm (2") x _ blocking member to create the in-fill void.
- D. Position the steel support plate over the support angle and plug weld as indicated on Drawing sheet A893.
- E. Grind (with 20-40 grit aluminum oxide disc) or blast the exposed steel plate to provide a suitable surface for epoxy grout to adhere.
- F. Concrete at in-fill grout location must be 28 days old minimum. Roughen surface of exposed concrete and remove any surface laitance.
- G. Clean all loose dust and debris from in-fill grout pocket by vacuuming.
- H. Determine the extent of the in-fill grout pocket and make the form area liquid-tight. Protect all surfaces and finishes adjoining the in-fill grout pocket by plastic sheeting or provide a double coat of forms being removed with paste wax. Provide form voids of 9.525 mm (3/8") at stainless steel and other designated positions to allow for backer rod and sealant as shown on Drawing sheet A893.
- I. Stir each liquid component separately before blending. Pour all of Part A into mechanical mixer and then add B while mixing slowly and well.
 - 1. After Part A and Part B are thoroughly mixed (before aggregate is added), with a new paint brush apply a coat of the mixed resin to the entire exposed surface of the steel plate (this should be a very small portion of the mixed resin). Immediately proceed with mixing the remaining grout ingredients.
- J. With the remaining mixed resin slowly add aggregate with continued mixing until all aggregate is uniformly coated and proper consistency is achieved.
- K. Fill the in-place grout pocket with epoxy grout to elevation indicated to provide a flush and level transition from structural slab to the edge of the Cart Conveyor construction and acts a base for VCT flooring.

3.4 CART GATE ASSEMBLY INSTALLATION

- A. Comply with manufacturer's recommendations and written installation instructions.
- B. Install steel post and hinge assembly at openings of cart conveyors in location as indicated on Drawings.
 - 1. Retain temporary bracing on post assemblies. Set posts plumb and true to line.
 - 2. Weld base plates to sub plates.
 - 3. Remove temporary bracing from post assembly after welding of base plates.
- C. Install hinge assembly to internal, concealed steel posts.
- D. Install gate panels to internal, concealed post and hinge assembly and adjust plumb with set screws.
- E. Install door panels to hinges. Permit sufficient adjustment to accommodate construction tolerances and other irregularities to maintain 38.1 mm (1-1/2 inch) spacing between door panels.
- F. Adjust doors for proper operation and for proper clearance.
- G. Manufacturer's Mounting Option: Provide alternate cart gate assembly mounting to cart conveyor balustrade or truss in lieu of floor mounting.

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3.5 FIELD QUALITY CONTROL

- A. **Acceptance Testing:** On completion of cart conveyor installation and before permitting use of cart conveyors, perform acceptance tests as required and recommended by authorities having jurisdiction.
 - 1. Test safety devices.
 - 2. Perform all system adjustment and testing.
 - 3. Conveyors to be turned over to Owner for use at turnover date.
- B. The project will be subject to Target's VT commissioning process and equipment will be inspected by a Target Representative, an Elevator Consultant or both. Any deficiency list will be required to be addressed and completed within 14 days of receipt unless an alternate timeline is approved by Target.

- C. At least once during the warranty year, a representative of Cart Conveyor Manufacturer or Target Consultant shall observe the operation and make recommendations to the maintenance company for repair, adjustments. Maintenance Contractor shall have 30 days to complete the deficiency list.
- D. **Operating Test:** Conduct performance test at rated speed and capacity in the presence of Owner's designated personnel. Determine that all operation systems and devices are functioning properly. Run ten (10) Owner provided shopping carts of each type being utilized at store, sequentially thru system, two times or as necessary to fine tune conveyors system, including sensors, safety devices, and other associated equipment settings.
- E. **Controller Software Version:** Controller software version must be identified on controller and on fault monitor in supervisory mode. When controller software is updated on site, controller software version must be updated on controller and on fault monitor.

3.6 TRAINING AND DEMONSTRATION

- A. Coordinate Owner personnel training sessions on material handling equipment, with General Contractor and Target HQ/Construction Project Manager.
- B. Cart conveyor manufacturer shall test shopping cart conveyor by sequentially loading ten (10) shopping carts of each type being provided to store, supplied by OSR, onto conveyor system, for the purpose of system adjustment for fully operational use. OSR to arrange delivery of test carts, 8 to 10 weeks prior to turnover.
- C. Cart conveyor manufacturer shall train and demonstrate operation of cart conveyor to Owner's Store Team personnel as outlined below including procedures relating to startup, shutdown, secure modes, restart procedures, identifying operational failure or malfunctions, service call protocol, and emergency procedures.
- D. Cart conveyor manufacturer personnel shall provide training for Store Team on store turnover day or as scheduled by General Contractor and Target HQ/Construction Project Manager prior to grand opening. Training sessions shall include the following:
 - 1. Provide two dedicated, one hour training sessions to Store Team. Store Team to include all Executive Team Leads, (ETL), as invited by OSR and/or SD. Training shall include:
 - a. General operation of the system,
 - b. Sleep, automatic and manual modes,
 - c. Turning the system on and off,
 - d. System reset,
 - e. Secure modes,
 - f. Placing shopping carts onto conveyor,
 - g. Removing children from carts,
 - h. Merchandize in shopping cart and under carriage clearance,
 - i. Demonstrate conveyor tow system and how shopping carts are guided into conveyor including tow bar unit on shopping cart; T shaped tow bar for Cartveyor system by PFlow.
 - j. Removing shopping carts from conveyor,
 - k. Shopping cart retrieval instructions,
 - l. Shopping cart spill recovery procedure,
 - m. Jogging stuck shopping carts in the conveyor,
 - n. Common fault and reset procedures,
 - o. Sensors types,
 - p. Emergency stop operation,
 - q. Safety gates and access sensors,
 - r. Safety overview, and
 - s. Emergency protocol.
 - 2. Cart conveyor manufacturer personnel shall not include or provide any training information or materials, which are the domain of trained, licensed material handling service technicians or vertical transport service technicians, to the Store Teams.

3.7 CART CONVEYOR SCHEDULE

- A. **Cart Conveyors:**
 - 1. **Total Quantity:** X Cart Conveyors.
 - 2. **Cart Conveyor Nos.:** As indicated on Drawings.

3. **Total Vertical Rise:**
 - a. X meters (XX'-X") for Cart Conveyors CC# and CC# As indicated on Drawings.
 - b. X meters (XX'-X") for Cart Conveyors CC# and CC# As indicated on Drawings.
4. **Floors Served:**
 - a. X floor to Y floor for conveyors CC# and CC#. As indicated on Drawings.
 - b. Y floor to Z floor for conveyors CC# and CC#. As indicated on Drawings.
5. **Shopping Cart Types:** Target All Plastic Shopping Cart and Target Two-Tier shopping cart.
6. **Speed:** 0.406 meters per second (80 feet per minute).
7. **Angle of Inclination:** 30 degrees.
8. **Arrangement:** Located adjacent to escalators or as indicated on Drawings.
9. **Operation:** # upward going units, # downward going units.
10. **Operational Requirements:** Standard duty type operation; 7 carts @ 68.04 kd (150 lbs) per cart, 476.27 kg (1050 lbs.) max. capacity.
11. **Balustrades:** Satin stainless steel. Stainless steel to extend to the chord line on all exposed sides.
12. **Deck Boards:** Satin stainless steel.
13. **Molding and Trim:** Satin stainless steel.
14. **Power Supply:** 480 volts-3 phase-60 cycle.
15. **Safety Devices:** Key or digital direction start switch.
 - a. Emergency stop switch.
 - b. Entrance gates with cart sensor.
 - c. Cart jam monitors and/or motor overload sensors.
 - d. Entrance and exit monitors.
 - e. 12.7 mm (1/2 inch) thick x 609.6 mm (24 inch) high acrylic safety barriers mounted into top of conveyor balustrades.
 - f. Watertight switches and electrical fittings.
 - g. Epoxy painted trusses; all truss-related components to be hot dipped galvanized or epoxy painted.
 - h. Truss heater located at under deck controller location.
 - 1) Truss heater power requirements:
 - (a) One heater (at top landing pit near controller); power requirement: 25 amp circuit.
 - i. Gasketed fault screen access door.
16. **Signage:**
 - a. "Remove items from bottom of shopping cart." Text to be all white color, mounted to conveyor balustrade at in bound right side.
17. **No visible company name or logo.**

END OF SECTION

EXHIBIT D

CERTIFICATE OF COMPLETION OF LANDLORD'S WORK (CONFIRMATION OF DELIVERY OF PREMISES IN CONDITION REQUIRED)

Date: _____

The undersigned hereby certifies to Target Corporation (Tenant) that:

1. Excepting any Punch List Items set forth on Exhibit A attached hereto, all of Landlord's Work has been completed in accordance with the Delivery Specifications attached to a part of that certain Lease between Landlord and Tenant dated _____, 201__.
2. All of Landlord's Work conforms to all governing codes including, but not limited to, all applicable building codes and lighting requirements. All work will be in full conformance with the ADA Accessibility Guidelines (ADAAG) for Tenant's intended use.
3. Final governmental acceptance of all aspects of Landlord's Work occurred on _____, 201__.
4. The Premises is hereby delivered to Tenant: (i) in a tenantable condition, as defined as the Premises being in a condition with all exterior walls, floors, ceilings, doors, vertical transportation, and windows in place and that all building systems serving the Premises (e.g. electrical, plumbing, HVAC, and mechanical) are in working order such that the Premises is tenantable for operations, and (ii) as otherwise required under the Lease.
5. All Governmental Authorities have issued a temporary or permanent certificate of occupancy (or equivalent) for the Premises indicating satisfactory completion of Landlord's Work, and Tenant is legally permitted to occupy the Premises to perform Tenant's Work, fixture and furnish the Premises and, upon completion of Tenant's Work, obtain a permanent certificate of occupancy (or equivalent) for the Premises to open to the public as a retail store.
6. To the best of the undersigned's knowledge, any deviation from plans and specifications approved by Tenant have been noted on an "*As Built*" set of Landlord's final construction documents for Landlord's Work.
7. Tenant's Construction Project Manager has been provided a copy of an "*As Built*" set of Landlord's final construction documents for Landlord's Work.

8. Landlord acknowledges and agrees that Tenant's acknowledgment of receipt of this Certificate of Completion of Landlord's Work below is merely an acknowledgement of receipt and does not waive any of Tenant's rights with respect to any latent defects in Landlord's Work or waive any of Tenant's rights and remedies under the Lease and the Delivery Specifications.

Landlord's Project Architect: _____

By: _____

Registration No. _____

Landlord's Authorized Representative

By: _____

Name: _____

Receipt of this Certificate of Completion for Landlord's Work:

Target Corporation/Tenant On-Site Representative or Construction Project Manager

By: _____

Name: _____

Date: _____

(OSR or Construction Project Manager must email the fully executed form to: PD-RE-DocRequests@target.com and Lease.Accounting@target.com)

EXHIBIT E
Fixed Rent Schedule

For each Lease Year from and after the Rent Commencement Date:

<u>Lease Year</u>	<u>Annual</u>	<u>Monthly</u>
1-2	1,795,620.00	149,635.00
3-4	1,831,532.40	152,627.70
5-6	1,868,163.05	155,680.25
7-8	1,905,526.31	158,793.86
9-10	1,943,636.84	161,969.74
11-12	1,982,509.57	165,209.13
13-14	2,022,159.76	168,513.31
15	2,062,602.96	171,883.58
16	2,062,602.96	171,883.58
17-18	2,103,855.02	175,321.25
19-20	2,145,932.12	178,827.68
21-22	2,188,850.76	182,404.23
23-24	2,232,627.78	186,052.31
25	2,277,280.33	189,773.36
26	2,277,280.33	189,773.36
27-28	2,322,825.94	193,568.83
29-30	2,369,282.46	197,440.20
31-32	2,416,668.10	201,389.01
33-34	2,465,001.47	205,416.79
35	2,514,301.50	209,525.12
36	2,514,301.50	209,525.13
37-38	2,564,587.53	213,715.63
39-40	2,615,879.28	217,989.94
41-42	2,668,196.87	222,349.74
43-44	2,721,560.80	226,796.73
45	2,775,992.02	231,332.67

EXHIBIT F
SNDA

[City State T#]

DRAFTED BY:
Target Law Department
Attn: _____
1000 Nicollet Mall, TPS-3155
Minneapolis, MN 55403

SUBORDINATION, NON-DISTURBANCE, AND ATTORNMENMENT AGREEMENT

THIS SUBORDINATION, NON-DISTURBANCE, AND ATTORNMENMENT AGREEMENT ("Agreement") is made and entered into as of _____, 20__, by and between TARGET CORPORATION, a Minnesota corporation ("**Tenant**"), whose address is 1000 Nicollet Mall, Minneapolis, Minnesota 55403, Attn: Real Estate Portfolio Management, [City State T#], _____, a _____ ("**Borrower**"), whose address is _____, and _____, a _____ ("**Lender**"), whose address is _____.

BACKGROUND

A. Lender has agreed to make a first mortgage loan (the "**Loan**") to Borrower, repayment of which is to be secured by a [*Mortgage and Security Agreement and Fixture Financing Statement*] (the "**Mortgage**") on certain real estate as more fully described on the attached Exhibit A and the improvements thereon (the "**Mortgaged Property**").

B. The Mortgage has been recorded in the office of the County Recorder in the County of _____, State of _____, as Document No. _____.

C. Tenant is the tenant under a Lease dated _____, 20__ (including all amendments and ancillary agreements, the "**Lease**"), made by Borrower, as landlord, pursuant to which Tenant has leased a portion of the Mortgaged Property, said portion being more fully described in the Lease (the "**Premises**").

D. A Memorandum of Lease evidencing the Lease has been recorded in the office of the County Recorder, County of _____, State of _____ in Book _____ at page _____.

E. As a condition precedent to Lender's disbursement of Loan proceeds, Lender has required that Tenant subordinate the Lease and its interest in the Premises to the lien of the Mortgage.

NOW, THEREFORE, for good and valuable consideration, it is agreed as follows:

1. **SUBORDINATION AND NON-DISTURBANCE.** Subject to the provisions of this Agreement, Tenant hereby agrees that the Lease and the rights of Tenant in and to the Premises are subject and subordinate to the Mortgage, and to all amendments, supplements, modifications, renewals, and extension thereof, but Lender consents to the terms and provisions of the Lease and agrees that (a) Tenant's possession of the Premises and Tenant's rights and privileges under the Lease (including during any extensions or renewals thereof) will not be terminated, diminished, or interfered with by Lender in the exercise of any of Lender's rights under the Mortgage, and (b) Lender will not join Tenant as a party defendant in any action or proceeding foreclosing on the Mortgage unless such joinder is necessary to foreclose on the Mortgage, and then only for such purpose and not for the purpose of terminating Tenant's interest and estate under the Lease.

2. **ATTORNMEN**. If any interest of Borrower in the Premises is transferred by reason of foreclosure or other proceeding brought by Lender under the Mortgage, including a deed in lieu of foreclosure, Tenant will be bound to the successor to Borrower's interest (the "Owner") under all of the terms, covenants, and conditions of the Lease for the balance of the term thereof remaining and any extensions, or renewals thereof, and Tenant does hereby attorn to Owner as Tenant's landlord. The attornment will be effective and self-operative immediately without the execution of any further instruments on the part of either Tenant or Owner. From and after such attornment, Owner will be bound to Tenant under all of the terms, covenants, and conditions of the Lease as direct indenture of Lease with the same force and effect as if originally entered into between Tenant and Owner, but Tenant will be under no obligation to pay rent to Owner except in accordance with the provisions of Section 4 below.

3. **LENDER'S RIGHT TO CURE LEASE DEFAULTS.** Tenant will give Lender a copy of any notice of default issued by Tenant to Borrower under the Lease at the address of Lender as set forth above and will give Lender such time as is provided to Borrower under the Lease to cure such default or rectify such occurrence. Tenant will not, except in an emergency, be entitled to cancel the Lease, or abate or offset against the rent, or exercise any other right or remedy, until Lender has been given notice of default and an opportunity to cure the same as provided herein. The failure of Tenant to give any such notice to Lender will not be deemed a default hereunder or under the Lease, but no such notice will be deemed to have been given or effective as to Lender unless and until such notice is given to Lender in accordance with this Section. Lender must give Tenant at least thirty (30) days' prior notice of any acquisition by Lender of Borrower's interest in the Lease.

4. **PAYMENTS TO OWNER OR LENDER.** Upon written notification to Tenant from Owner of attornment pursuant to Section 2 above or a notice from Lender demanding that rent and other payments be made to such party after a default by Borrower under the Mortgage, Borrower hereby authorizes and directs Tenant, notwithstanding any contrary instruction, direction, or assertion of Borrower, as landlord under the Lease, and Tenant hereby agrees, to pay to Owner or Lender, as the case may be, all payments due under the terms of the Lease commencing with the calendar month following receipt of such demand from Owner or Lender. As an inducement for Tenant's agreement to pay as aforesaid, Owner or Lender, as the case may be, must indemnify, defend, protect and hold Tenant harmless from any liability Tenant may suffer as a result of compliance with such party's

written instructions to make such payment. Borrower, as landlord under the Lease, also hereby releases and discharges Tenant from any liability under the Lease with respect to any such payments paid to Owner or Lender after Tenant's receipt of any such notice and agrees that Tenant may rely on any such notice without duty to inquire, dispute, or challenge any such notice.

5. **BORROWER'S INDEMNITY.** If Tenant becomes a party to any litigation by reason of Lender's enforcement of any rights granted by the Mortgage and Tenant is not in default under the terms and conditions of the Lease so as to permit Borrower (as landlord under the Lease) thereunder to terminate the Lease, Borrower must indemnify, defend and hold Tenant harmless against any loss, damage, liability (or any claims in respect to the aforementioned), costs or expenses (including without limitation reasonable attorneys' fees) of whatever nature caused by or resulting from Lender's enforcement of the rights granted Lender under the Mortgage.

6. **SCOPE OF MORTGAGE.** Neither the Mortgage nor any other security granted in connection with the Mortgage will extend to or be construed as subjecting in any manner to the lien thereof, any of "Tenant's Improvements" or "Tenant's Property" (as such terms are defined in the Lease) at any time furnished or installed by or for Tenant or Tenant's subtenants or licensees on the Premises regardless of the manner or mode of attachment thereof.

7. **CONFIRMATION OF MORTGAGE; RELEASE.** If Tenant requests in writing that Lender indicate whether the Mortgage has been released, terminated or satisfied, Lender must respond to such written request within thirty (30) business days of such request. If Lender fails to respond to such request within ten (10) days after a second request for such confirmation, then Lender will be deemed to have waived and forfeited Lender's rights to receive notice and cure defaults under this Agreement. Upon recording in the real property records where the Premises are located of a written full release, satisfaction or reconveyance of the Mortgage authorized by Lender, this Agreement will automatically terminate without the need for further action.

8. **AUTHORITY.** Each party warrants and represents to each other (for itself only) that (a) it has full capacity, right, power and authority to execute, deliver and perform this Agreement, and (b) all required actions and approvals therefor have been duly taken and obtained on behalf of such party.

9. **RECORDATION.** At Tenant's election, this Agreement, or a memorandum, notice or short form of this Agreement, may be recorded in the applicable real estate records and the parties will cooperate with Tenant in effecting such recordation.

10. **AMENDMENT.** This Agreement may not be modified orally or in any manner other than by a written instrument signed by the parties hereto or their successors in interest.

11. **SUCCESSORS AND ASSIGNS.** This Agreement and each and every covenant, agreement and other provision hereof is binding upon and inures to the benefit of the parties hereto and their heirs, administrators, representatives, successors and assigns.

12. **CHOICE OF LAW.** This Agreement is made and executed under and in all respects is to be governed by and construed in accordance with the laws of the State where the Premises are located.

13. **CAPTIONS AND HEADINGS.** The captions and headings of the various sections of this Agreement are for convenience only and are not to be construed as confining or limiting in any way the scope or intent of the provisions hereof. Whenever the context requires or permits, the singular includes the plural, the plural includes the singular and the masculine, feminine and neuter are freely interchangeable.

14. **NOTICES.** Any notice which any party hereto may desire or may be required to give to any other party must be in writing to the addresses as set forth above, or to such other place any party hereto may designate by written notice, and such notice will be deemed to have been given as of the date such notice is (i) delivered to the party intended, (ii) delivered to the current address of the party intended, or (iii) rejected at the current address of the party intended, provided such notice was prepaid.

15. **EFFECTIVENESS.** This Agreement is effective when the last party to execute this Agreement does so, but if such party does not execute and deliver a fully executed counterpart to the other signing parties within twenty (20) days after the first signing party's execution date, then this Agreement will be void and will not be effective against any party.

[SIGNATURE PAGES FOLLOWS]

**SIGNATURE PAGE
TO
SUBORDINATION, NON-DISTURBANCE
AND
ATTORNMEN AGREEMENT**

IN WITNESS WHEREOF, the parties hereto have each caused this Agreement to be executed as of the date first above written.

BORROWER

By: _____

Name: _____

Title: _____

STATE OF _____

COUNTY _____

The foregoing instrument was acknowledged before me this ____ day of _____, 20__,
by _____ as _____ of _____, a
_____ corporation, on behalf of the corporation, who is personally known to me.

Notary Public

Printed Name of Notary Public

My Commission expires: _____

**SIGNATURE PAGE
TO
SUBORDINATION, NON-DISTURBANCE
AND
ATTORNMENMENT AGREEMENT**

IN WITNESS WHEREOF, the parties hereto have each caused this Agreement to be executed as of the date first above written.

TENANT

TARGET CORPORATION

Name: _____

Title: _____

STATE OF MINNESOTA

COUNTY OF HENNEPIN

The foregoing instrument was acknowledged before me this ____ day of _____, 20__, by _____ as _____ of Target Corporation, a Minnesota corporation, on behalf of the corporation, who is personally known to me.

Notary Public

Printed Name of Notary Public

My Commission expires: _____

**SIGNATURE PAGE
TO
SUBORDINATION, NON-DISTURBANCE
AND
ATTORNMENMENT AGREEMENT**

IN WITNESS WHEREOF, the parties hereto have each caused this Agreement to be executed as of the date first above written.

LENDER

By: _____

Name: _____

Title: _____

STATE OF _____

COUNTY _____

The foregoing instrument was acknowledged before me this ____ day of _____, 20__,
by _____ as _____ of _____, a
_____ corporation, on behalf of the corporation, who is personally known to me.

Notary Public

Printed Name of Notary Public

My Commission expires: _____

EXHIBIT A